SCHOOL OF GRADUATE STUDIES
ACADEMIC CALENDAR

2018-2019

SCHOOL OF
GRADUATE STUDIES

SGS ACADEMIC CALENDAR 2018/2019

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INTRODUCTION

This Calendar is a comprehensive guide to our graduate programs and courses. It also provides information on admissions, awards and registration, and serves as a record of the policies and procedures of the School of Graduate Studies at Queen's University.

The course listings and academic programs described in this Calendar represent Senate- and Faculty-approved requirements and electives for completion of degree requirements. Circumstances beyond the control of the university, such as severe budget shortfalls, may result in restrictions in the number and range of course and program choices available to students as compared with those listed herein or in other University publications. The University reserves the right to limit access to courses or programs, and at its discretion, to withdraw particular programs, options, or courses altogether. In such circumstances the University undertakes to the best of its ability to enable students registered in affected programs to complete their degree requirements.

The Senate and The Board of Trustees of Queen's University reserve the right to make changes in courses, programs and regulations described in this Calendar, in either its printed or electronic form, without prior notice.

ESSENTIAL VALUES

At Queen's, the following essential values will govern our actions:

INTELLECTUAL INTEGRITY

Rigorous standards of intellectual integrity must be upheld in all teaching, learning, and research activities.

FREEDOM OF INQUIRY AND EXCHANGE OF IDEAS

The University commits itself to remain open to free inquiry and the free expression of ideas, both of which are basic to the University's central purpose. Any restrictions proposed on free expression must be openly stated and subjected to careful public scrutiny and evaluation.

EQUAL DIGNITY OF ALL PERSONS

Queen's cherishes the diversity of human experience and background and supports the freedom of individuals to study, teach, work and carry out research without fear of harassment, intimidation or discrimination.

The School of Graduate Studies is committed to creating committees and making nominations that are as inclusive as possible with reference to such indicators as sex, age, academic rank and discipline, race, ethnicity, sexuality, and (dis)ability.

ACADEMIC STAFF

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

A

Aarssen, L.W.G
B.Sc. (Hons.)(Western Ontario), Ph.D.(British Columbia)
Professor of Biology
Associate Graduate Coordinator in Biology
Affiliated with Cultural Studies

Abbott, B.
B.A.(Simon Fraser), M.A.(Victoria), Ph.D. (British Columbia)
Assistant Professor of Economics

Abbott, M.G.
B.A.(Hons.)(Calgary) M.A., Ph.D. (Princeton)
Associate Professor of Economics

Abolmaesumi, P.
B.Sc., M.A.Sc.(Sharif), Ph.D.(British Columbia)
Adjunct Associate Professor of Computing

Abrahams, V.C.
B.Sc.,Ph.D.,D.Sc.(Edinburgh)
Professor Emeritus of Biomedical and Molecular Sciences

Abrams, T.J.
B.A., M.A., Ph.D. (Carleton)
Assistant Professor of Sociology

Adams, O.B.
B.A., M.A.(Western Ontario)
Adjunct Assistant Professor of Public Health Sciences

Adams, M.L.
B.A.(Hons.), M.A.(Trent), Ph.D.(Toronto)

Professor of Kinesiology and Health Studies
Cross-Appointed to Sociology; Affiliated with Cultural Studies
On Academic Leave July 2018-December 2018

Adams, M.A.
B.Sc.,M.Sc.,Ph.D.(Western Ontario)
Professor of Biomedical and Molecular Sciences
Cross-Appointed to Kinesiology and Health Studies

Addas, S.
B.S. (Cairo), M.B.A. (Concordia), Ph.D. (McGill)
Assistant Professor, Smith School of Business

Adell, B.L.
B.A., LL.B. (Alberta), D.Phil. (Oxon)
Professor Emeritus of Law

Agarwal, A.
B.Arch. (Lucknow), M.Tech. (CEPT, India), M.Pl., Ph.D. (USC), M.C.I.P, R.P.P.
Associate Professor of Geography and Planning

Agarwal, S.
B.Arch. (Panjab), M.Pl.(Southern California), AICP
Adjunct Lecturer of Geography and Planning

Ahn, C.
B.Ed.(Alberta), M.Ed., Ph.D. (British Columbia)
Assistant Professor of Education

Aiken, A.B.
B.Sc. (Ottawa), B.Sc. (Dalhousie), M.Sc., Ph.D. (Queen's)
Adjunct Professor, School of Rehabilitation Therapy

Aiken, S.J.
B.A.(York), M.A. (Toronto), LL.B., LL.M.(Osgoode)
Associate Professor of Law; Affiliated with Cultural Studies

Airton, L.,
B.A. (McGill), M.A., Ph.D. (York)
Assistant Professor of Education

Akbar, N.
B.Sc. (Hons), M.Sc., Ph.D. (Toronto)
Adjunct Assistant Professor of Occupational Therapy
Adjunct Assistant Professor of Physical Therapy

Akenson, D.H.
B.A.(Yale) M.Ed.,Ph.D.(Harvard) D.Litt.(McMaster) D.Hum.(Hon.Causa)(Lethbridge)
D.Litt.(Hon.Causa)(Guelph) D.Law(Hon.Causa)(Regina) F.R.S.C.
Professor of History

Akl, S.G.
B.Sc., M.Sc.(Alexandria) Ph.D.(McGill)
Professor of Computing

Alajaji, F.
B.E. (Beirut), M.S., Ph.D. (Maryland)
Professor of Mathematics and Statistics
Cross-Appointed to Electrical and Computer Engineering

Allan, B.
B.A. (Queen's), M.A., Ph.D.(Northwestern)
Affiliated with Cultural Studies
Associate Professor of Film and Media

Aldersey, H.
B.A. (North Carolina at Chapel Hill), M.S.Ed., Ph.D. (Kansas)
Assistant Professor, School of Rehabilitation Therapy
Queen's National Scholar, Community Based Rehabilitation

Alexandrowicz, G.W.
M.A., LL.B.(Toronto) LL.M.(Harvard)
Professor Emeritus of Law

Allen, J.
B.A., B.F.A., M.A.(Queen's)
Adjunct Assistant Professor of Art History; Affiliated with Cultural Studies

Allingham, J.
B.Sc. (Hons.), Ph.D. (Western Ontario)
Associate Professor of Biomedical and Molecular Sciences

Almost, J.
B.Sc.N., M.Sc.N./ACNP (Western Ontario), Ph.D. (Toronto)
Associate Professor of Nursing; Associate Professor of Health Quality
on sabbatical July 2018-June 2019

Alvarado, B.
B.
Adjunct Assistant Professor of Public Health Sciences

Amani, B.
B.A. (York), LL.B.(Osgoode), S.J.D.(Toronto)
Associate Professor of Law; Affiliated with Cultural Studies

Amari, S.
D.E.S. (Algeria), M.S.E.E., Ph.D. (Washington)
Cross-Appointed to Electrical and Computer Engineering

Amsden, B.G.
B.A.Sc.(Waterloo), M.A.Sc.(Toronto), Ph.D.(Queen's)
Professor of Chemical Engineering
Head of Chemical Engineering

Amyot, G.G.
B.A.(Western), M.A.(Oxon), Ph.D.(Reading)
Professor of Political Studies

Anastassiades, T.P.
B.Sc., M.Sc., Ph.D., M.D., C.M. (McGill)
Professor Emeritus of Medicine and Biomedical & Molecular Science
Professor Emeritus of Translational Medicine

Anderson, B.C.
P.Eng, B.Sc.(Toronto), M.A.Sc., Ph.D.(British Columbia)
Professor of Civil Engineering; Cross-Appointed to Geography and Planning

Anderson, R.J.
B.Sc.(Alberta) M.Sc., Ph.D.(Queen's)
Professor of Mechanical and Materials Engineering

Andrevski, G.
B.B.E. (Univ. of Saints Cyril & Methodious), M.B.A. (Grand Valley State), Ph.D.

(Kentucky)
Associate Professor, Smith School of Business

Andrew, J.S.
B.Sc.(Western Ontario), M.Sc. Planning, Ph.D.(Toronto), M.C.I.P., R.P.P.
Continuing Adjunct Assistant Professor of Geography and Planning
Continuing Adjunct Assistant Professor of Environmental Studies

Andrew, R.D.
B.Sc.,M.Sc.(Western Ontario), Ph.D.(York)
Professor of Biomedical and Molecular Sciences
Faculty in Neuroscience

Andrews, W.S.
B.Eng., M.Eng., Ph.D.(RMC)
Cross-Appointed to Chemical Engineering
Royal Military College

Antar, Y.M.M.
B.Sc.(Alexandria) M.Sc., Ph.D.(Manitoba)
Cross-Appointed to Electrical and Computer Engineering

Arboleda-Florez, J.E.
M.D.(Universidad Nacional, Bogota, Columbia) M.D.,D.F.L.D.Psych.(Ottawa)
Ph.D.(Epid.)(Calgary) F.R.C.P.C., F.A.P.A., D.A.B.F.P., F.A.C.F.P., F.A.C.F.E.
Professor of Psychology
Professor of Psychiatry
Adjunct Professor of Public Health Sciences
Faculty in Neuroscience

Arbuckle, T.E.
B.Sc. (Western Ontario), M.Sc. (Toronto),Ph.D. (North Carolina)
Adjunct Assistant Professor of Public Health Sciences

Archer, S.
MD (Queen's)
Head, Department of Medicine
Professor of Medicine
Professor of Translational Medicine
Cross-Appointed to Biomedical and Molecular Sciences

Archibald, D.A.
B.Sc.(Toronto) M.Sc.,Ph.D.(Queen's)
Adjunct (Group 1) Assistant Professor of Geological Sciences and Geological Engineering

Archibald, J.F.
B.Sc., M.Sc., Ph.D.(Queen's), P. Eng.
Emeritus Professor of Mining Engineering

Armstrong, I.
B.Sc., M.A., Ph.D.(Queen's)
Adjunct Assistant Professor of Kinesiology and Health Studies

Arndt, C.
Staatsexamen (Bonn), M.A., Ph.D. (Johns Hopkins)
Assistant Professor of German Language and Literature
Graduate Coordinator of German Language and Literature

Arnott, S.E.
B.Sc. (Toronto), M.Sc. (Miami), Ph.D. (Wisconsin-Madison)
Professor of Biology

Aronson, K.J.
B.Sc., M.Sc.(McGill), Ph.D.(Toronto)
Professor of Public Health Sciences
Cross-Appointed to Environmental Studies

Ascough, R.S.
B.A.(Winnipeg Bible College), M.A.(London Bible College) M.A., Ph.D.(Toronto)
Professor of Religious Studies
Cross-Appointed to Classics
Affiliated with Cultural Studies

Ashworth, L.
B.Com.(Hons.), Ph.D.(British Columbia)
Associate Professor, Smith School of Business

Aston, W.P.
B.Sc.(Birmingham), M.A.(Toronto), Ph.D.(London)
Professor Emeritus of Biomedical and Molecular Sciences

Atherton, D.L.
B.A., M.A.(Cantab)
Professor Emeritus of Physics, Engineering Physics and Astronomy

Atkinson, W.
B.Sc. (Queen's), M.Sc. (Alberta), Ph.D. (McMaster)
Adjunct Associate Professor of Physics, Engineering Physics and Astronomy
Trent University

Atkinson, J.
B.A. (Hons.)(Queen's), M.A.Sc. (Waterloo), Ph.D. (Queen's)
Adjunct Associate Professor of Psychology

Auais, M.
BSc PT, (JUST), PT MSc (NYIT), Ph.D. (McGill),
Assistant Professor, School of Rehabilitation Therapy

Aziz, S.
M.F.A. (Concordia) M.A. (GCU Lahore)
Affiliated with Cultural Studies; Associate Professor of Fine Arts

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B

Babak, T.
B.Sc. (Queen's), Ph.D.(Toronto)
Adjunct Assistant Professor of Biology

Babbitt, S.E.
B.A.(Ottawa), M.A., Ph.D.(Cornell)
Associate Professor of Philosophy
Cross-Appointed to Education; Affiliated with Cultural Studies

Baer, A.R.
B.Sc.(Hons.), M.Sc.(Western Ontario), B.Ed.(Queen's), Ph.D.(Alberta)
Adjunct Associate Professor of Biomedical and Molecular Sciences

Baer, M.G.
B.A.(British Columbia), LL.B.(Queen's). LL.M.(California)
Professor Emeritus of Law

Baetz, T.
B.Sc., MD (Ottawa)
Adjunct Associate Professor of Oncology
Cross-appointed to Translational Medicine

Bailey, G.
B.A., M.A. (Toronto), Ph.D. (Harvard)
Professor of Art History
Bader Chair in Southern Baroque Art

Bailey, M.J.
LL.B.(Toronto), M.Sc., LL.M.(Queen's), D.Phil.(Oxford)
Professor of Law

Baines, B.
B.A.(McGill), J.D. (Queen's)
Professor of Law
Cross- Appointed to Gender Studies

Baird, M.C.
B.Sc.(McMaster) M.A., Ph.D.(Toronto)
Professor Emeritus of Chemistry

Baker, C.
M.Phil.(London), MN(Dalhousie), Ph.D.(Texas)
Professor Emeritus of Nursing

Baker, W.E.
B.A.Sc.(Toronto) S.M., Sc.D.(MIT), P.Eng.
Professor Emeritus of Chemical Engineering
Professor Emeritus of Chemistry

Bakhshai, A.
B.Sc., M.Sc. (Isfahan), Ph.D. (Concordia)
Professor of Electrical and Computer Engineering

Bakhurst, D.J.
B.A.(Keele) M.A., D.Phil.(Oxon)
Professor of Philosophy
Charlton Professor

Bala, N.C.
L.S.M., B.A.(Toronto), J.D. (Queen's), LL.M.(Harvard)
Professor of Law

Bale, C.G.
B.A.(R.M.C.) M.A.(McGill) LL.B.(Queen's), LL.M.(London)
Professor Emeritus of Law

Balogh, L.
B.Sc., M.Sc., Ph.D. (Eötvös Loránd University, Budapest)
Assistant Professor of Mechanical and Materials Engineering

Banfield, B.W.
B.Sc., Ph.D. (British Columbia)
Professor of Biomedical and Molecular Sciences
Associate Head, Postgraduate Education, Biomedical and Molecular Science
Graduate Coordinator, Biomedical and Molecular Sciences

Banks, K.
B.A., LL.B. (Toronto), S.J.D. (Harvard)
Associate Professor of Law

Banting, K.G.
B.A.(Hons.)(Queen's), D.Phil.(Oxon)
Professor Emeritus of Political Studies
Professor Emeritus of Policy Studies; Queen's Research Chair

Baranchuk, A.
B.Ac., MD (Argentina)
Professor of Medicine and Biomedical and Molecular Sciences
Professor of Biomedical and Molecular Sciences
Professor of Translational Medicine

Baranton, S.
M.Sc., M.Eng, Ph.D (Poitiers)

Adjunct Associate Professor of Chemistry
Associate Professor of Chemistry, University of Poitiers

Barber, G.
BA, MA, Ph.D. (Toronto)
Adjunct Associate Professor of Geography

Barling, J.I.
B.A., M.A., Ph.D.(Witwatersrand)
Professor, Smith School of Business; Cross-Appointed to Psychology

Baron, S.W.
B.A., M.A.(Victoria), Ph.D.(Alberta)
Professor of Sociology

Bartels, S.
B.Sc., MD (Memorial), MPH (Harvard School of Public Health)
Cross-Appointed to Public Health Sciences

Barthelmé, T.
Licence, M.Sc., Ph.D. (Université de Strasbourg)
Assistant Professor of Mathematics and Statistics

Bartholomew, S.
B.A., MBA (Toronto), Ph.D. (McGill)
Continuing Adjunct Associate Professor, Smith School of Business

Barz, D.
Associate Professor of Chemical Engineering; Cross-Appointed to Mechanical and Materials Engineering

Basser, H.
B.A.(Yeshiva) M.A.,Ph.D.(Toronto)
Professor of Religious Studies

Basta, S.
B.Sc. (Heriot-Watt University, Edinburgh), M.Sc. (East London), Ph.D. (Bern)
Associate Professor of Biomedical and Molecular Sciences

Bates, P.J.
B.Sc. (Queen's), M.E., Ph.D. (McGill)

Cross-Appointed to Chemical Engineering
Royal Military College

Bathurst, R.J.
P.Eng., B.Sc., M.Sc.(Queen's)
Faculty of GeoEngineering
Cross-Appointed to Civil Engineering; Royal Military College

Batorowicz, B.,
B.Sc. (O.T.), M.Sc. (Western), Ph.D. (McMaster)
Assistant Professor, School of Rehabilitation Therapy

Baumgart, A.J.
R.N., B.S.N. (British Columbia)(, M.Sc. (A)(McGill), Ph.D. (Toronto)
Professor Emeritus of Nursing

Bayoumi, I.
B.Sc., MD (Queen's), M.Sc. (McMaster)
Cross-appointed to Public Health Sciences

Beach, C.M.
B.A.(Hons.)(McGill), M.A., Ph.D.(Princeton)
Professor Emeritus of Economics
Director, John Deutsch Institute

Beach, P.
B.A. (Toronto), M.A., Ph.D. (OISE/Toronto)
Assistant Professor of Education

Beamish, R.B.
B.A., B.P.H.E., B.Ed., M.A.(Queen's), Ph.D.(Toronto)
Professor of Sociology
On leave July 2018 – June 2019

Beauchemin, D.
B.Sc., Ph.D.(Montreal)
Professor of Chemistry

Becker, H.A.
B.E., M.Sc.(Sask.) Sc.D.(MIT) F.C.I.C., P.Eng.
Professor Emeritus of Chemical Engineering

Bedard, L.L.
B.Sc.(Hons), M.Sc. (Carleton), Ph.D. (Queen's)
Adjunct Assistant Professor of Biomedical and Molecular Sciences

Béland, L.K.
B.Sc., Ph.D. (Université de Montréal)
Assistant Professor of Mechanical and Materials Engineering

Belanger, P.
B.A. (Victoria), M.A. (Kentucky), Ph.D. (SUNY Buffalo)
Adjunct Associate Professor of Geography and Planning
Adjunct Assistant Professor of Public Health Sciences

Belanger, S.
B.A., M.A. (McGill), Ph.D. (Toronto)
Adjunct Associate Professor of Public Health Sciences
Affiliated with Cultural Studies

Bénard, J.
B.A., M.A., Ph.D.(Montréal)
Associate Professor of French Studies

Bendena, W.
B.Sc.(Toronto), Ph.D.(Western Ontario)
Professor of Biology
Faculty in Neuroscience

Beninger, R.J.
B.A.(Western Ontario), M.A., Ph.D.(McGill)
Professor Emeritus of Psychology
Faculty in Neuroscience

Bennett, B.M.
B.Sc.,Ph.D.(Queen's)
Professor of Biomedical and Molecular Sciences
Associate Dean of the Faculty of Health Sciences

Berg, D.

B.A. (Dalhousie), B.Ed. (Mount Saint Vincent), M.Ed., Ph.D. (Queen's)
Associate Professor of Education

Berg, M.
B.A.(Lampeter) D.Phil.(Oxford)
Professor of English Language and Literature

Bergin, J.
B.A. (Nat'l U. of Ireland), M.Sc. (London at L.S.E.), Ph.D. (Princeton)
Professor of Economics
Canada Research Chair

Berkok, U.
B.A. (Bogazici), GradDipEc M.A.(East Anglia), M.Sc., Ph.D. (Queen's)
Adjunct Associate Professor of Economics

Berman, B.J.
A.B. (Dartmouth) M.A.(L.S.E.) M.Phil., Ph.D.(Yale)
Professor Emeritus of Political Studies

Berman, D.
B. A. (Pennsylvania), MD (Univ. of Texas Southwestern Medical)
Associate Professor o f Pathology and Molecular Medicine

Bernfeld, G.
B.A. (McGill), M.A., Ph.D. (Queen's)
Adjunct Assistant Professor of Psychology

Berry, J.W.
B.A.(Sir George Williams) Ph.D.(Edinburgh)
Professor Emeritus of Psychology

Bertrand, K.
B.A.()
Assistant Professor in Film and Media; Affiliated with Cultural Studies

Bevan, G.
B.A. (Hons.)(British Columbia), M.A., Ph.D. (Toronto)
Associate Professor of Geography and Planning
Cross-Appointed to Art

Cross-Appointed to Classics
Cross-Appointed to Geological Sciences and Geological Engineering

Beyak, M.K.
B.Sc. (Queen's), M.D. (Toronto)
Assistant Professor of Medicine
Cross-Appointed to Biomedical and Molecular Sciences

Bickenbach, J.E.
B.A.(California State), M.A., Ph.D.(Alberta),LL.B.(Toronto)
Professor Emeritus of Philosophy

Bickis, U.I.
B.Sc.(Manitoba), M.Eng.(Toronto), Ph.D.(Queen's)
Adjunct Assistant Professor of Mining Engineering

Bicknell, R.
b
Cross-appointed to Mechanical and Materials Engineering

Bidwell, R.G.S.
B.Sc. (Dalhousie), B.A., M.Sc., Ph.D. (Queen's)
Professor Emeritus of Biology

Birk, A.M.
B.Sc., M.Sc., Ph.D.(Queen's), P.Eng.
Professor of Mechanical and Materials Engineering

Birt, T.P.
B.Sc.(P.E.I.), M.Sc., Ph.D.(Memorial)
Adjunct Assistant Professor of Biology

Bisson, E.
B.Sc., M.A., Ph.D. (Ottawa)
Adjunct Assistant Professor, School of Rehabilitation Therapy

Black, E.R.
B.A.(Western Ontario), M.A.(British Columbia), Ph.D.(Duke)
Professor Emeritus of Political Studies

Blake, R.W.P.
B.A. (Royal Military College), M.B.A., Ph.D (Western Ontario)
Continuing Adjunct Professor, Smith School of Business

Blanchford, P.
B.Sc. (Hons.) (Waterloo), Ph.D. (York)
Adjunct Assistant Professor of Biology

Blennerhassett, M.
B.Sc.(Hons.),Ph.D.(Western Ontario)
Associate Professor of Medicine
Cross-Appointed to Biology
Cross-Appointed to Biomedical and Molecular Sciences

Blohm, G.
B.Sc., M.Sc. (Stuttgart), Ph.D. (Université catholique de Louvain, Belgium)
Associate Professor of Biomedical and Molecular Sciences
Faculty in Neuroscience
Cross-Appointed to Mathematics and Statistics; Cross-Appointed to Computing

Blostein, D.
B.S.(Illinois) M.S.(Carnegie-Mellon) Ph.D.(Illinois)
Professor of Computing

Blostein, S.D.
B.Sc. (Cornell) M.Sc., Ph.D.(Illinois), P. Eng.
Professor of Electrical and Computer Engineering
Cross-Appointed to Mathematics and Statistics

Boadway, R.W.
B.Eng.(Royal Military College), B.A., B.Phil. (Oxon), Ph.D.(Queen's), F.R.S.C.
Professor Emeritus of Economics
David Chadwick Smith Chair

Boag, P.T.
B.Sc.(Hons.) (Queen's), Ph.D.(McGill)
Emeritus and Adjunct Professor of Biology

Boag, A.H.
B.Sc.(Hons.)(Queen's), M.A.Sc.(Toronto), M.D.(Queen's)
Associate Professor of Pathology and Molecular Medicine

Boegman, R.J.
B.Sc.,M.Sc.(Pretoria) Ph.D.(Toronto)
Professor Emeritus of Biomedical and Molecular Sciences
Faculty (Retired) in Neuroscience

Boegman, L.
B.Eng. (McGill), M.A.Sc. (Toronto), Ph.D. (Western Australia)
Associate Professor of Civil Engineering

Bogoyavlenskij, O.I.
M.D.,Ph.D.(Steklov Mathematical Institute, U.S.S.R.)
Professor of Mathematics and Statistics

Bohm, A.
B.A. Hons., M.A. (Alberta), Ph.D. (Johns Hopkins)
Adjunct Associate Professor of German Language and Literature

Bolden, B .
B.A.(Carleton), M.M. (British Columbia), B.Ed. (OISE/Toronto), Ph.D. (Toronto)
Associate Professor of Education

Bona, M.D.
MD, FRCS (C)
Assistant Professor of Ophthalmology
Cross-appointed to School of Rehabilitation Therapy

Bond, S.L.
L.B.A.(Lewis and Clark College)M.Sc., Ed.D.(Indiana)
Associate Professor of Education

Bongie, C.
B.A. (British Columbia), M.A., Ph.D. (Stanford)
Professor of English Language and Literature
Queen's National Scholar

Bonham, D.
QC., B.A., B.Com., LL.B.(Sask.) L.L.M. (Harvard), F.C.A.
Professor Emeritus of Law

Bonier, F.
B.Sc.(Guelph), M.S.(Idaho), Ph.D.(Washington)
Assistant Professor of Biology

Booij, L.
M.A., Ph.D. (Leiden University)
Assistant Professor of Psychology

Booth, C.
B.
Adjunct Professor of Public Health Sciences

Booth, R.
B.A.H, B.Sc.(PT), (Queen's), M Manip Ther (Curtin), DPT, FCAMPT
Assistant Professor, School of Rehabilitation Therapy

Boulay, M.G.
B.Sc., M.Sc., (Laurentian), Ph.D (Queen's)
Adjunct Associate Professor of Physics, Engineering Physics and Astronomy

Boulden, J.
B.A.(Hons.)., M.A.,LL.M., Ph.D. (Queen's)
Professor, Royal Military College of Canada
Cross-Appointed to Political Studies

Boulinier, T.
D.V.M. (Alfort Veterinary School, France), D.E.A., Ph.D. (Pierre et Marie Currie, France)
Adjunct Assistant Professor of Biology

Boutilier, A.
Adjunct Assistant Professor of Art History
Affiliated with Cultural Studies

Bowie, C.
M.A., Ph.D. (Hofstra)
Associate Professor of Psychology

Boyce, W.
B.A.(McMaster), B.Sc.(Queen's), M.Sc.(McMaster), Ph.D.(Toronto)
Cross-Appointed to Rehabilitation Science

Boyd, J.D.
B.A.Sc.(Toronto) Ph.D.(Cambridge)
Professor Emeritus of Mechanical and Materials Engineering
Professor Emeritus of Mathematics, Science and Technology Education Group

Boyd, J.G.
B.Sc. (Lakehead), Ph.D. (Alberta), MD (Queen's)
Associate Professor of Medicine
Associate Professor of Translational Medicine

Brachman, R.W.I.
B.E.Sc., Ph.D. (Western Ontario)
Professor of Civil Engineering

Bramante, J.
B.A. (Sarah Lawrence College), Ph.D. (University of Hawaii)
Assistant Professor of Physics, Engineering Physics & Astronomy

Bramburger, A.J.
B.Sc.(Hons), M.Sc., Ph.D. (Windsor)
Adjunct Faculty in Environmental Studies

Braun, A.
Ph.D. (University of Frankfurt/Main)
Associate Professor of Geological Sciences and Geological Engineering

Bray, C.
B.L.A. (Guelph), M.A. (Oxford Brookes), Ph.D. (U.C. London), M.C.I.P., R.P.P., C.S.L.A., O.A.L.A.
Adjunct Associate Professor of Geography and Planning

Breede, H.C.(Major)
B.A.(Hons.)(RMCC), M.A.(New Brunswick), Ph.D.(RMCC)
Professor, Royal Military College of Canada
Cross-Appointed to Political Studies

Brien, J.F.
B.Sc.,Ph.D.(Windsor)
Professor Emeritus of Biomedical and Molecular Sciences
Faculty in Neuroscience

Brison, J.
B.A. (McGill), M.A., Ph.D. (Queen's)
Associate Professor in History; Affiliated with Cultural Studies

Brison, R.
M.D.(Queen's), M.P.H.(Washington), C.C.F.P., FRCPC
Associate Professor of Medicine
Cross-Appointed to Public Health Sciences

Brock, K.L.
B.A., M.A. (McMaster), Ph.D. (Toronto)
Professor of Policy Studies
Cross-Appointed to Political Studies

Brockhausen, I.
B.Sc., Ph.D.(Toronto)
Associate Professor of Medicine
Adjunct Associate Professor of Biomedical and Molecular Sciences

Brodt, S.
B.A. (California), M.S., Ph.D. (Stanford)
Associate Professor, Smith School of Business
Cross-Appointed to Psychology

Brogly, S.
B.Sc. (Queen's), M.Sc.(McGill), Ph.D. (Queen's)
Adjunct Assistant Professor of Public Health Sciences

Brohman, K.
Ph.D (Western Ontario)
Associate Professor, Smith School of Business

Brooks, S.
B.Sc., MD(Queen's), M.H.Sc.(British Columbia)
Cross-Appointed to Public Health Sciences

Brouwer, B.
B.Sc. (Waterloo), M.Sc. (McGill), Ph.D. (Toronto)
Professor, School of Rehabilitation Therapy
Faculty in Neuroscience
Cross-Appointed to the School of Kinesiology and Health Studies

Brower, J.
B.Com. (New York Genesce), M.A. (Syracuse), M.S., Ph.D. (Texas Austin)
Assistant Professor, Smith School of Business

Brown, S.R.
B.A., M.A. (Queen's), Ph.D. (Yale)
Professor Emeritus of Biology

Brown, R.J.C.
M.Sc.(Sydney) Ph.D.(Illinois)
Professor Emeritus of Chemistry

Brown, R. Stanley
B.Sc.(Alberta), M.Sc., Ph.D.(California at San Diego)
Professor Emeritus of Chemistry

Brown, R. Stephen
B.Sc.(Dalhousie) M.Sc., Ph.D.(Toronto)
Associate Professor of Chemistry
Associate Professor of Environmental Studies

Brundage, M.
B.Sc., M.D., M.Sc.(Queen's)
Professor of Oncology
Professor of Translational Medicine
Adjunct Professor of Public Health Sciences

Brunet, D.G.
Professor of Medicine
Faculty in Neuroscience

Bruno-Jofré, R.
Licentiate in History, Professorship in History (Ntl. U. of the South, Argentina), Ph.D.(Calgary)
Professor of Education; Cross-Appointed to History

Bryant, J.T.
B.Sc., M.Sc., Ph.D.(Queen's), P.Eng.
Professor Emeritus of Mechanical and Materials Engineering
Cross-Appointed to Kinesiology and Health Studies

Bu, N.
B.Sc.(Fudan), M.Sc.(Shanghai Jiao Tong), Ph.D.(British Columbia)
Associate Professor, Smith School of Business

Buchan, B.
B.Sc., M.Comm.(Toronto) Ph.D.(Michigan)
Professor Emeritus, Smith School of Business

Buell, K.
B.Sc. (Concordia), M.A., Ph.D. (Queen's)
Adjunct Assistant Professor of Psychology

Buncel, E.
B.Sc.,Ph.D.,D.Sc.(London) F.C.I.C.
Professor Emeritus of Chemistry

Burfoot, A.J.
B.F.A., M.E.S.(York), Ph.D.(Sussex)
Head of the Department of Sociology
Professor of Sociology
Cross-Appointed to Gender Studies; Affiliated with Cultural Studies

Burke, F.
Ph.D. (Florida)
Professor Emeritus of Film and Media

Burke, S.
R.N., B.S. (Loma Linda), M.N. (Washington), M.A., Ph.D. (Toronto)
Professor Emeritus of Nursing

Burney, S.
B.A.(Osmania), B.Ed.(Brandon), M.A.(Manitoba), M.Ed.(OISE/UT), Ph.D.(Toronto)
Associate Professor of Education
Affiliated with Cultural Studies

Burns, T.
B.
Adjunct Professor of Art Conservation

Butler, A.
B.Sc., B.Ed., M.A. (Toronto), Ph.D. (Cornell)
Assistant Professor of Education

C

Cahill, C.A.
B.Sc.(Mount Allison), M.Sc.,Ph.D.(Dalhousie)
Adjunct Associate Professor in Biomedical and Molecular Sciences
Faculty in Neuroscience; Canada Research Chair

Calle-Gruber, M.
L.ès L.(Lettres Mod.&Italien) D.E.S.,CAPES(Grenoble) Docotral IIIe Cycle(Montpellier III) Doctorat d'Etat(Paris VIII)
Professor Emeritus of French Studies

Calluzzo, P.
B.A.(Williams College), Ph.D. (Rutgers)
Assistant Professor, Smith School of Business

Camacho, A.
M.Sc.(La Trobe University, Australia), Ph.D. (Australian National)
Adjunct (Group 1) Assistant Professor of Geological Sciences and Geological Engineering

Camargo Plazas, M.
B.Sc.N. (Universidad de la Sabana, Columbia), MN (Universidad Nacional de Columbia), Ph.D. (Alberta)
Assistant Professor of Nursing

Cameron, J.
A.R.C.S.T., D.R.C.,Ph.D.(Strathclyde)
Professor Emeritus of Materials and Metallurgical Engineering
Professor Emeritus of Mechanical and Materials Engineering

Cameron, L.J.
B.A., M.A. (British Columbia), Ph.D. (Cambridge)
Professor of Geography and Planning

Affiliated with Cultural Studies
Canada Research Chair in Historical Geographies of Nature (2003-2013)

Cameron, S.B.B.A. (Victoria), M.A. (Trent), Ph.D. (Notre Dame)
Assistant Professor of English Language and Literature

Campbell, R.
B.Sc.(Hons.)(Queen's), Ph.D. (Massachusetts Institute of Technology)
Adjunct Assistant Professor of Biomedical and Molecular Sciences

Campbell, T.I.
P.Eng., B.Sc., Ph.D., D.Sc. (Queen's, Belfast)
Professor Emeritus of Civil Engineering

Campbell, L.C.
B.Sc. (Hons.), MSc. (Alberta), Ph.D (Waterloo)
Adjunct Faculty in Biology

Campbell, P.
B.A. (Trent), M.A. (Laurentian), B. Ed. (Manitoba), Ph.D. (Queen's)
Associate Professor of History

Cann, N.M.
B.Sc. (New Brunswick) Ph.D. (Dalhousie)
Professor of Chemistry

Cannon, W.T.
B.Com.(Manitoba), M.B.A. (York), Ph.D. (Harvard)
Associate Professor, Smith School of Business

Capicciotti, C.
B.Sc., Ph.D (Ottawa)
Assistant Professor of Chemistry

Carmichael, D.M.
B.Sc. (Queen's), Ph.D. (Berkeley) P. Eng.
Professor Emeritus of Geological Sciences and Geological Engineering

Carmichael, H.L.
B.A. (Western Ontario), Ph.D. (Stanford)
Professor of Economics

Caron, C.-I.
B.A., M.A. (Laval), D.E.A. (Ecole des Hautes), Ph.D. (McGill)
Associate Professor of History; Affiliated with Cultural Studies

Carpenter, J.
B.Sc.(Mount Allison), M.D., M.Sc. (Queen's)
Cross Appointed Assistant Professor of Public Health Sciences

Carpenter, M.W.
B.A.(Massachusetts), Ph.D.(Brown)
Professor Emeritus of English Language and Literature

Carr, P.A.
B.Sc.N.(Western) M.Sc.(Queen's)
Adjunct Professor of Public Health Sciences

Carran, J.
B.Sc. (Hons.)(Salford), Ph.D. (Sheffield)
Adjunct Assistant Professor of Chemistry

Carrington, T.
B.Sc.(Hons.)(Toronto), Ph.D. (California at Berkeley)
Professor of Chemistry
Cross-Appointed to Physics, Engineering Physics and Astronomy

Carson, J.T.
B.A.(North Carolina), M.A. (Tulane), Ph.D.(Kentucky)
Professor of History

Carson, A.S.
B.Com. (Mount Alison), B.Ed., M.A. (Dalhousie), Ph.D. (London)
Professor, Smith School of Business

Carstens, E.B.
B.Sc., M.Sc.(Alberta) Ph.D.(Sherbrooke)
Professor of Biomedical and Molecular Sciences

Carter, D.D.
B.A., LL.B.(Queen's) B.C.L.(Oxon)
Professor Emeritus of Law

Carter, M.
B.A.S. (Guelph), M.Sc, Ph.D. (Ottawa)
Adjunct Assistant Professor of Public Health Sciences

Cartledge, J.C.
B.Sc., M.Sc., Ph.D. (Queen's), P.Eng.
Professor of Electrical and Computer Engineering
Queen's Research Chair

Casselman, J.M.
B.S.A., Ph.D. (Toronto), MSc (Guelph)
Adjunct Professor of Biology

Castel, B.
B.Sc.,M.Sc.(Hebrew Uni.) Ph.D.(Lyon)
Professor Emeritus of Physics, Engineering Physics and Astronomy

Castelhano, M.
B.S (Toronto), M.A., Ph.D. (Michigan
Associate Professor of Psychology; Faculty in Neuroscience

Castleden, H.
B.A. (Manitoba), M.Ed., Ph.D. (Alberta)
Associate Professor of Geography and Planning
Associate Professor of Public Health Sciences ; Affiliated with Cultural Studies; Cross-Appointed to Environmental Studies
Canada Research Chair

Cellarosi, F.
Laurea Magistrale (Bologna), M.Sc., Ph.D. (Princeton)
Assistant Professor of Mathematics and Statistics

Chabot, A.
B.Sc., M.Sc. (McGill), Ph.D. (Queen's)
Adjunct Assistant Professor of Biology

Chaigneau, P.
MS (HEC, Paris), M.A. (EHESS), Ph.D. (London School of Economics)
Assistant Professor, Smith School of Business

Chakrabarti, A.
B.Sc. (Calcutta), M.S. (Indian Statistical Institute), M.Sc. (National University of Singapore), Ph.D. (Duke))
Associate Professor, Smith School of Business

Chakrabarti, P.
B.A. (School of Planning and Architecture, Delhi) M.A. (Mass. Institute of Technology), Ph.D. (Brown)
Assistant Professor of Political Studies

Chamberlain, D.F.
Licenciatura (UNAM), M.A., Ph.D.(Toronto)
Affiliated with Cultural Studies

Champagne, P.
B.Sc. (McGill), B.Sc. Eng. (Guelph), M.Eng., Ph.D. (Carleton)
Associate Professor of Civil Engineering
Cross-Appointed to Chemical Engineering

Chan, W.Y.G.
B.E., M.E. (Carleton), Ph.D. (U of California, Santa Barbara)
Professor of Electrical and Computer Engineering
Chair of Graduate Studies in Electrical and Computer Engineering

Chan, M.
B.Sc. (Toronto), M.Sc. (York), Ph.D. (Toronto)
Adjunct Associate Professor in Pathology and Molecular Medicine

Chan, Y.E.
S.B., S.M.(MIT), M.Phil.(Oxford), Ph.D.(Western Ontario)
Professor, Smith School of Business
Associate Dean, Research & MSc/PhD Programs

Chapler, C.K.
B.A., M.A. (Drake), Ph.D (Florida)
Professor Emeritus of Biomedical and Molecular Sciences

Charmantier, A.
B.Sc. (Montpellier), M.Sc. (Montpellier II), Ph.D. (Montpellier)
Adjunct Assistant Professor of Biology

Chaykowski, R.P.
B.A., M.A.(Queen's), Ph.D.(Cornell)
Director, Master of Industrial Relations Program
Professor of Industrial Relations
Cross-Appointed to Law

Chen, B.
B.Sc. (Beijing Normal), M.Sc. (Chinese Academy of Science), Ph.D. (Waterloo)
Associate Professor of Public Health Sciences
Cross-Appointed to Statistics
Cross-Appointed to Mathematics and Statistics

Chen, D.
B.S.(Beijing), M.S.(Chinese Academy of Sciences), Ph.D.(California)
Professor of Geography and Planning
Cross-Appointed to Environmental Studies

Chen, J.C.-H.
D.M.D., M.D.(Montreal)
Assistant Professor of Pathology and Molecular Medicine

Chen, M.C.
B.Sc.Eng.(Queen's), Ph.D.(California Institute of Technology)
Professor of Physics, Engineering Physics and Astronomy

Cheng, L.
M.A. (Reading), Ph.D. (Hong Kong)
Professor of Education

Childs, T.
B.Sc.(Guelph) Ph.D.(Queen's) M.D.(Toronto)
Assistant Professor of Pathology and Molecular Medicine

Chin, P.
B.Sc.(Alberta), B.Ed., M.Sc.(Calgary), Ph.D.(British Columbia)
Associate Professor of Education

Chin-Sang, I.D.
B.Sc. (Waterloo), Ph.D. (Toronto)

Professor of Biology
NCIC Scientist

Chitayat, S.
Ph.D. (Queen's)
Adjunct Assistant Professor of Biomedical and Molecular Sciences
NCIC Scientist

Chippindale, A.K.
B.Sc.H. (Alberta), Ph.D. (California)
Professor of Biology

Chiu, J.
B.A. (Hong Kong), Ph.D. (Western Ontario)
Adjunct Assistant Professor of Economics

Chivers, M.
B.Sc. (Guelph), M.A., Ph.D. (Northwestern)
Associate Professor of Psychology

Choudhury, S.
B.Sc. (Bangladesh), M.Sc. (Lethbridge), Ph.D. (Queen's)
Adjunct Assistant Professor of Computing

Chowdhury, A.
B.A. (Jadavpur), M.A. (Deccan College Research Institute), Ph.D. (Washington State)
Associate Professor of History

Christianson, P.K.
B.A.(St. Olaf) M.A., Ph.D.(Minnesota)
Professor Emeritus of History

Christou, T.
B.A.(Hons.), M.A.(Toronto), Ph.D.(Queen's)
Associate Professor of Education
Associate Dean of Graduate Studies
Cross-appointed to History

Ciccarelli, G.
B.Eng., M.Eng., PhD. (McGill)

Professor of Mechanical and Materials Engineering
Coordinator of Graduate Studies in Mechanical and Materials Engineering

Clapham, L.
Bachelor of Metallurgy(Univ. of Wollongong, New South Wales), Ph.D.(Queen's), P.Eng.
Professor of Physics, Engineering Physics and Astronomy

Clark, A.F.
B.Sc.(Acadia), M.Sc.(Dalhousie), Ph.D.(McGill)
Adjunct Professor of Biochemistry
Professor Emeritus of Pathology and Molecular Medicine

Clark, A.H.
B.Sc.(London) Ph.D.(Manchester)
Professor Emeritus of Geological Sciences and Geological Engineering

Clark, G.R.
A.B.(Humboldt State College) M.A.(Berkeley)Ph.D.(Harvard)
Professor Emeritus of English Language and Literature

Clark, K.J.
B.Sc.(Toronto), M.Sc. (Trent), Ph.D. (Queen's)
Assistant Professor of Physics, Engineering Physics & Astronomy

Cleary, S.
B.A. (Acadia), B.Ed. (Saint Francis Xavier), M.B.A. (Saint Mary's), Ph.D. (Toronto)
Professor, Smith School of Business

Cline, C.
B.A., M.A., Ph.D. (Toronto)
Associate Professor of Biomedical and Molecular Sciences
Cross-Appointed to Philosophy

Cockfield, A.J.
B.A.(Western Ontario), LL.B.(Queen's), J.S.M., J.S.D.(Stanford)
Professor of Law
Affiliated with Cultural Studies

Colautti, R.
B.Sc., M.Sc. (Windsor), Ph.D. (Toronto)
Assistant Professor of Biology

Cole, H.A.
B.A. (Hons), LL.M.(Queen's), M.Ed., Ph.D. (Texas)
Assistant Dean, Students, Faculty of Law

Colgan, L.
B.Sc., B.Ed., M.Ed., Ph.D.(Toronto)
Professor of Education

Colivicchi, F.
M.A. (Universita di Firenze), Ph.D. (Universita di Perugia), Diploma (Universita di Firenze)
Professor of Classics

Collier, C.P.
B.Sc.,M.Sc.,Ph.D.(Toronto) F.C.A.C.B.
Professor of Pathology and Molecular Medicine

Collins, J.
B.A. (Middlebury College), Ph.D. (Harvard)
Associate Professor of History

Collins, P.A.
B.Sc., M.Sc. (McMaster), Ph.D.(Simon Fraser)
Associate Professor of Geography and Planning
Cross-Appointed to Kinesiology and Health Studies

Conacher, A.
B.A., M.A.(Queen's) Ph.D.(Montréal)
Associate Professor of French Studies

Conaghan, C.
B.A.(Pittsburgh) M.A., Ph.D.(Yale)
Professor of Political Studies
On Leave July 1-December 31, 2018

Condra, M.
B.A. (Dublin) M.A., Ph.D. (Queen's)
Adjunct Assistant Professor of Psychology

Cooke, S.J.
B.ES., M.Sc. (Waterloo), Ph.D. (lllinois)
Adjunct Assistant Professor of Biology

Cooper, A.
B.A.(Hons.)(Queen's), B.Ed.(Christchurch), M.Ed., Ph.D.(Toronto)
Associate Professor of Education

Cooper, W.H.
B.A.(Rochester), M.B.A.(McMaster), Ph.D.(Toronto)
Professor, Smith School of Business; Cross-Appointed to Psychology

Cooper, H.
B.Sc.(Queen's), M.Sc.(London School of Economics)
Adjunct Lecturer of Public Health Sciences

Cordy, J.R.
B.Sc., M.Sc., Ph.D.(Toronto)
Professor of Computing
Cross-Appointed to Electrical and Computer Engineering

Costigan, P.A.
B.P.E.(New Brunswick) M.Sc., Ph.D.(Queen's)
Associate Professor of Kinesiology and Health Studies
Cross-Appointed to School of Rehabilitation Therapy
On Academic Leave July 2018-June 2019

Côté, G.P.
B.Sc.(Toronto), Ph.D.(Alberta)
Professor of Biomedical and Molecular Sciences

Côté, J.
B.Sc.(Ottawa), M.Sc.(Montreal), Ph.D.(Ottawa)
Professor of Kinesiology and Health Studies
Cross-Appointed to Education
Director of the School of Kinesiology and Health Studies

Cotton, C.
B.A. (Michigan), M.A., Ph.D. (Cornell)
Associate Professor of Economics

Cotton, D.H.G.
B.Sc.(McGill) M.Sc.(Purdue) Ph.D.(Queen's)
Adjunct Assistant Professor of Psychology

Courchene, T.J.
B.A.(Saskatchewan), Ph.D.(Princeton), F.R.S.C.
Professor Emeritus of Policy Studies; Professor Emeritus of Economics
Jarislowsky-Deutsch Professor

Courteau, S.
B.Sc. (Montreal), M.Sc., Ph.D. (U. of California, Santa Cruz)
Professor of Astronomy and Astrophysics
Professor of Physics, Engineering Physics and Astronomy
Coordinator of Graduate Studies in Physics, Engineering Physics and Astronomy

Cox, W.
B.A., M.A. (Carleton), Ph.D.(Queen's)
Associate Professor of Political Studies

Cozzi, M.
B.A. (Catholic - Milan), M.A. (Bocconi), D.Phil, (Milan), Ph.D. (University College London)
Assistant Professor of Economics

Craig, W.M.
B.A.(British Columbia) M.A., Ph.D.(York)
Professor of Psychology
Head of Department of Psychology

Craig, A.W.B.
B.Sc.(Hons.)(Queen's), Ph.D.(McGill)
Associate Professor of Biomedical and Molecular Sciences
Field Coordinator of Graduate Studies in Biomedical and Molecular Sciences (Biochemistry and Cell Biology)

Cramm, H.
B.A. (Memorial), M.A., B.Sc. (O.T.) (Queen's), M.Sc. (O.T.-Post Professional (Dalhousie), Ph.D.(Queen's)
Assistant Professor, School of Rehabilitation Therapy

Crawford, R.G.
B.S.(Penn State) M.Sc., Ph.D.(Cornell)
Professor Emeritus of Computing

Crocker, S.
B.Sc. (University of King's College), Ph.D.(Dalhousie)
Adjunct Assistant Professor of Pathology and Molecular Medicine

Cromb, I.
B.Com., M.A.(Carleton) Ph.D.(Queen's)
Adjunct Assistant Professor of Economics

Crowder, C.M.D.
M.A.,D.Phil.(Oxon.)
Professor Emeritus of History

Crowder, A.A.
M.A., Ph.D.(Dublin)
Professor Emeritus of Biology

Croy, B.A.
D.V.M.(Guelph), Ph.D.(Toronto)
Emeritus Professor of Biomedical and Molecular Sciences
Professor of Obstetrics and Gynaecology
CRC Tier I Chair in Reproduction, Development and Sexual Function

Crudden, C.
B.Sc., M.Sc. (Toronto), Ph.D. (Ottawa)
Professor of Chemistry
Canada Research Chair, Tier 1

Csergö, Z.
M.A., Ph.D. (George Washington)
Head, Political Studies
Associate Professor of Political Studies

Cuddy, L.L.
B.A, A.M.M.(Manitoba) M.A., Ph.D.(Toronto)
Professor Emeritus of Psychology

Culham, E.G.
M.CI.Sc.(Western Ontario), Dip.P.T.(Toronto), Ph.D.(Queen's)
Professor Emeritus, School of Rehabilitation Therapy

Cumming, B.F.
B.Sc., Ph.D.(Queen's)
Professor of Biology
Head of Biology
Cross-Appointed to the School of Environmental Studies

Cumming, S.
B.A.A. (Ryerson), M.C.I.P., R.P.P.
Adjunct Lecturer of Geography and Planning

Cummings, M.S.
B.A.(Hons.),M.A.(Victoria) Ph.D. (Ottawa)
Assistant Professor of Classics

Cunningham, M.F.
B.Sc., M.Sc.(Queen's), Ph.D.(Waterloo)
Professor of Chemical Engineering
Cross-Appointed to Chemistry
Ontario Research Chair in Green Chemistry and Engineering

Currarino, R.
B.A. (Swathmore), M.A. (Northeastern), Ph.D. (Rutgers)
Associate Professor of History

D

da Silva, A.M.F.
B.Sc.(Porto), M.Sc., Ph.D.(Queen's), P.Eng.
Professor of Civil Engineering

Dacin, T.
B.A. (Prince Edward Island), M.A. (New Brunswick), Ph.D. (Toronto)
Professor, Smith School of Business

Dacin, P.
B.A., MBA (McGill), Ph.D. (Toronto)
Professor, Smith School of Business

Dahan, S.
LL.B. (Nice), LL.M. (Leuven), Ph.D. (Cambridge)
Assistant Professor of Law

Dalrymple, R.W.
B.Sc.(Western Ontario) Ph.D.(McMaster)
Professor of Geological Sciences and Geological Engineering

Danby, R.
B.E.S. (Hons.)(Waterloo), M.E.S. (Wilfrid Laurier), Ph.D. (Alberta)
Acting Director, School of Environmental Studies (July–December 2018)
Associate Professor of Environmental Studies
Associate Professor of Geography and Planning

Dancey, J.
B.Sc., MD (Ottawa)
Professor of Oncology
Professor of Translational Medicine

Daneshmend, L.K.
B.Sc.(Southampton), Ph.D. (University of London), D.I.C. (Imperial College)
Professor in Mining Engineering; Affiliated with Cultural Studies
Cross-Appointed to Mechanical and Materials Engineering
Noranda-Falconbridge Chair in Mine-Mechanical Engineering

Daub, M.
B.Comm. (Queen's); M.B.A., Ph.D. (Chicago)
Professor Emeritus, Smith School of Business

Daugulis, A.J.
B.Sc.(Queen's), M.Sc.(Western Ontario), Ph.D.(Queen's)
Emeritus Professor of Chemical Engineering
Cross-Appointed to Biology

Davey, S.
B.Sc., Ph.D.(Western Ontario)
Associate Professor of Pathology and Molecular Medicine
Cross-Appointed to Oncology
Cross-Appointed to Biomedical and Molecular Sciences

Davidson, C.M.
B.A., B.Sc., M.Sc.(Carleton), M.D.(Queen's)
Assistant Professor of Pathology and Molecular Medicine

Davidson, J.
B.A. (Stirling), Ph.D. (Edinburgh)
Associate Professor of Geography and Planning
Affiliated with Cultural Studies
On leave July 1, 2018-June 30, 2019

Davies, P.L.
B.Sc.(Wales), Ph.D.(British Columbia)
Professor of Biomedical and Molecular Sciences; Cross-Appointed to Biology;

Davies, G.A.L.
M.D., FRCSC, FSOGC, FACOG
Cross-Appointed to Kinesiology and Health Studies

Davies, J.M.
B.A., M.A., Ph.D. (Queen's)
Adjunct Associate Professor of Philosophy
Affiliated with Cultural Studies

Davies , T.C.
B.A.Sc.(Queen's), M.Sc.(Calgary), Ph.D.(Waterloo)
Assistant Professor of Mechanical and Materials Engineering
Cross-Appointed to School of Rehabilitation Therapy
Affiliated with Cultural Studies

Davis, B.
B.Sc., M.Sc., Ph.D. (Queen's)
Adjunct Assistant Professor of Mining Engineering

Davison, C.
B.Sc., B.Ed.(Lakehead), M.P.H.(Glasgow), Ph.D.(Calgary)
Assistant Professor of Public Health Sciences

Dawes, R.W.
B.Sc.(Victoria) M.Sc., Ph.D.(Toronto)
Associate Professor of Computing

Day, A
B.Sc. (Concordia), M.Sc. (Queen's)
Adjunct Lecturer of Public Health Sciences

Day, T.
B.Sc., M.Sc. (British Columbia), Ph.D. (Queen's)
Professor of Mathematics and Statistics
Cross-Appointed to Biology

Day, R.
B.A.Sc.(British Columbia), M.A.(York), Ph.D.(Simon Fraser)
Associate Professor of Sociology
Associate Professor of Global Development Studies
Affiliated with Cultural Studies
On Leave January – June 2018

Daymond, M.
B.A., M.A., Ph.D. (Cambridge)
Professor of Mechanical and Materials Engineering

De Souza, E.M.
B.Sc.(Federal Uni.of Minas Gerais), M.Sc., Ph.D.(Queen's)
Associate Professor of Mining Engineering

Dean, T.R.
B.Sc., M.Sc. (Saskatchewan), Ph.D. (Queen's)
Associate Professor of Electrical and Computer Engineering
Cross-Appointed to Computing; Adjunct Professor, Royal Military College

de Bettignies, J.
B.Sc. (London School of Economics and Political Science), M.A. (Université Catholique

de Louvain), M.B.A., Ph.D. (University of Chicago)
Professor, Smith School of Business

Deeley, R.G.
B.Sc.,Ph.D.(Sheffield)
Professor of Pathology and Molecular Medicine
Cross-Appointed to Biomedical and Molecular Sciences; Cross-Appointed to Oncology; Vice-Dean Research in the Faculty of Health Sciences

deGroot, P.
M.Sc. (Toronto), Ph.D. (Queen's)
Adjunct Assistant Professor in Biology

Delaney L.
B.Sc (O.T.) (Queen's)
Adjunct Lecturer, School of Rehabilitation Therapy

D'Elia, A.F.
Dip. Lit. Lat. (Universitá Gregoriana), BA., M.A. (Trinity College Dublin), AM. Ph.D. (Harvard)
Professor of History; Cross-Appointed to Classics

D'Elia, U.
B.A. (Yale), Ph.D.(Harvard)
Professor of Art History

Deluzio, K.J.
B.Sc. , M.Sc., Ph.D. (Queen's)
Professor of Mechanical and Materials Engineering
Dean, Faculty of Engineering and Applied Science

DeLuca, C.
B.Sc.(Toronto), B.Ed., M.Ed., Ph.D.(Queen's)
Associate Professor of Education

De Solla, S.
B.Sc.(Hons.)(Queen's), M.Sc. (Guelph)
Adjunct Lecturer (Group I), School of Environmental Studies

Delva, N.
M.D.,L.M.C.C.(Queen's)

Professor of Physiology
Professor of Psychiatry

DeMora, J.A.
B.Sc. (Concordia), MHSA (Alberta)
Adjunct Assistant Professor of Public Health Sciences

den Otter, S.M.
B.A.(McMaster), D.Phil(Oxon.)
Associate Professor of History

Dennis, D.T.
B.Sc., Ph.D.(Leeds)
Professor Emeritus of Biology

DePaul, V.
B.H.Sc. (P.T.), Ph.D. (McMaster)
Assistant Professor, School of Rehabilitation Therapy

Deshpande, N.
B.Sc.(Bombay), M.Sc. (Queen's), Ph.D.(Waterloo)
Associate Professor, School of Rehabilitation Therapy

Detomasi, D.
B.A.(Queen's), M.A. (Royal Military College), Ph.D. (Queen's)
Continuing Adjunct Associate Professor, Smith School of Business

Dhavernas, C.
B.A.,M.A.(Queen's), Ph.D. (Western Ontario)
Associate Professor of French Studies
Head, Department of French Studies
Cross-Appointed to School of Rehabilitation Therapy

Diak, B.J.
B.Sc., M.Sc. (Manitoba), Ph.D. (Queen's)
Associate Professor of Mechanical and Materials Engineering

Dickey, S.
B.A. (Smith), M.A., Ph.D. (New York University)
Professor of Art History
Bader Chair in Northern Baroque Art

Diederichs, M.S.
B.Sc., M.Sc. (Toronto), Ph.D. (Waterloo), P.Eng.
Professor of Geological Sciences and Geological Engineering

Dignam, M.M.
B.A.Sc., M.Sc., Ph.D. (Toronto)
Professor of Physics, Engineering Physics and Astronomy
Head of the Department of Physics, Engineering Physics and Astronomy

Dimitrov, I.
M.S. (Sofia University), Ph.D. (University of California, Riverside)
Associate Professor of Mathematics and Statistics
Associate Head of Mathematics and Statistics

Ding, K.
B.Sc.(China), M.Sc.(China), Ph.D.(Alberta)
Associate Professor of Public Health Sciences

Ding, W.
B.A. (Fudan), Ph.D. (Pittsburgh)
Associate Professor of Policy Studies
Cross-Appointed to Economics

Dingel, J.
M.Sc.(Berlin), Ph.D.(Carnegie Mellon)
Professor of Computing

Di Stefano, P.
Eng. (Ecole Centrale Paris), Ph.D. (Universite Paris Sud Orsay and CEA Saclay)
Professor of Physics, Engineering Physics & Astronomy

Dixon, J.M.
B.Sc.(McGill) M.S., Ph.D.(Connecticut)
Professor of Geological Sciences and Geological Engineering

Dixon, P.
B.Sc., M.B. (Newcastle-upon-Tyne, England)
Adjunct Professor of Public Health Sciences

Docoslis, A.
B.Sc. (Aristotle University of Thessaloniki), M.Sc. (Calgary), Ph.D.(Buffalo-SUNY)

Associate Professor of Chemical Engineering
Coordinator of Graduate Studies in Chemical Engineering

Doggett, M.D.
B.Sc.(Mount Allison), M.Sc., Ph.D.(Queen's)
Adjunct (Group 1) Associate Professor of Geological Sciences and Geological Engineering; Adjunct Professor in Mining Engineering

Donald, B.J.
B.A.(Hons.)(McGill), M.E.S.(York), M.Sc.Pl., Ph.D.(Toronto), M.C.I.P., R.P.P.
Professor of Geography and Planning

Donald, M.W.
B.A.(Loyola), M.A.(Ottawa), Ph.D.(McGill)
Professor Emeritus of Psychology

Donnelly, C.
B.Sc. (O.T.) (Queen's), M.Sc. (British Columbia), Ph.D. (Queen's)
Associate Professor, School of Rehabilitation Therapy
Cross-Appointed to Department of Family Medicine

Donnelly, P.
B ChB (Edinburgh), MBA (Stirling), MPH (Univ. of Wales College of Medicine), MD (Edinburgh)
Adjunct Professor of Public Health Sciences

Dorris, M.C.
Ph.D. (Queen's)
Faculty in Neuroscience

Douglas, M.S.V.
B.Sc. (Hons.), MSc., Ph.D. (Queen's)
Adjunct Associate Professor of Biology

Dow, K.
Faculty in Neuroscience

Downe, A.E.R.
B.Sc. (Alberta) M.A., Ph.D. (Queen's)
Professor Emeritus of Biology

Dringenberg, H.C.
B.A.(Lethbridge), M.Sc., Ph.D.(Western Ontario)
Professor of Psychology
Coordinator of Graduate Studies in Psychology
Faculty in Neuroscience

Duan, Q.
B.Sc., Ph.D. (McGill)
Assistant Professor of Computing
Assistant Professor of Biomedical and Molecular Sciences

Dube, S.
B.A. (Mount Allison), M.A. (Queen's), Ph.D. (Toronto)
Assistant Professor of Religious Studies

Dubey, S.
B.A. (Toronto), LL.B. (Queen's)
Continuing Adjunct Assistant Professor, Smith School of Business

Dubinsky, K.E.
B.A., M.A. (Carleton), Ph.D. (Queen's)
Professor of History
Professor of Global Development Studies; Affiliated with Cultural Studies
On Leave January – June 2018

Dudley, E .
B.A. (McGill), M.Sc. (HED), M.Sc., Ph.D. (Rochester)
Assistant Professor, Smith School of Business

Duff, A.
Adjunct Professor of Industrial Relations

Duffy, A.
B.Sc., M.Sc. (McMaster), MD (Calgary), RCPSC
Cross-appointed to Public Health Sciences

Duffin, J.M.
M.D. (Toronto), Ph.D. (Sorbonne),FRCP(C)
Hannah Professor of the History of Medicine
Professor Emeritus of History
Cross-Appointed to Philosophy; Cross-Appointed to Nursing

Dufresne, M.
B.A.(Ottawa) M.A.,Ph.D.(U.Q.A.M.)
Associate Professor of French Studies
Associate Professor of Linguistics

Duhn, L.
B
Assistant Professor of Nursing; Assistant Professor of Health Quality

Dujardin, G.
B.A. (Georgetown), M.A., Ph.D., (Northwestern)
Assistant Professor of English Language and Literature

Dumas, G.A.
Ing.(Toulouse), M.Sc.A.(Laval), Ph.D.(Ecole Polytechnique)
Professor Emeritus of Mechanical and Materials Engineering

Dumont, E.C.
Ph.D. (Universite de Montreal)
Associate Professor of Biomedical and Molecular Sciences
Faculty in Neuroscience; Cross-Appointed to Biology

Duncan, M.J.
B.Sc.(McGill), M.Sc.(Toronto), Ph.D.(Texas)
Professor Emeritus of Astronomy and Astrophysics
Professor Emeritus of Physics, Engineering Physics and Astronomy

Dunfield, J.
Ph.D. (Carnegie Mellon)
Assistant Professor of Computing

Du Prey, P.
B.A.(Pennsylvania) M.F.A., Ph.D.(Princeton)
Professor of Art History

E

Easteal, R.A.
A.C.S.M. (Mining)(Camborne), M.Sc. Eng., Ph.D. (Queen's)
Associate Professor of Biomedical and Molecular Sciences\

Eastham, A.R.
A.C
Professor Emeritus of Electrical and Computer Engineering

Eckert, C.G.
B.Sc.(Hons.)(Western Ontario), M.Sc. (Carleton), Ph.D.(Toronto)
Professor of Biology

Edge, D.
R.N., B.S.N. (Iowa), M.S.N. (Chapell Hill, North Carolina), Ph.D. (Toronto)
Associate Professor of Nursing

Edgelow, M.M.
B.Sc. (Alberta), M.Sc. (Queen's)
Adjunct Lecturer, School of Rehabilitation Therapy

Egan, R.
B.
Assistant Professor of Health Quality

Elbatarny, H.S.
MB BCh, M.Sc. (Manoura)
Adjunct Associate Professor of Biomedical and Molecular Sciences

Elgazzar, K.
B.Sc (Alexandria), M.Sc. (Arab Academy for Science and Tech.), Ph.D. (Queen's)
Adjunct Assistant Professor of Computing

Eliot, K.
B.LLM. (Osgoode Hall Law School); B.A (Guelph); B.A. (Toronto);Master of Law(
London School of Economics and Political Science)
Adjunct Professor in Industrial Relations

Elliot, D.
B.A. (Queen's), M.D. (Queen's) FRCPC
Assistant Professor of Psychiatry

Elliott, S.
B.F.A., B.Ed., M.Ed. (Queen's), Ph.D. (Concordia)
Associate Professor of Education

Elliott, B.E.
B.Sc., M.Sc., Ph.D. (Queen's)
Professor of Pathology and Molecular Medicine

Ellis, A.K.
B.Sc. (Guelph), M.Sc. (McMaster), MD (Queen's)
Associate Professor of Medicine
Professor of Translational Medicine
Cross-Appointed to Biomedical and Molecular Sciences

Ellis, R.E.
B.Sc.(D. Hons.) M.Sc.(Manitoba)Ph.D.(Massachusetts)
Professor of Computing
Cross-Appointed to Mechanical and Materials Engineering; Cross-Appointed to Biomedical and Molecular Sciences

English, A.
B.A., M.A. (Royal Military College), Ph.D. (Queen's)
Associate Professor of History

Epprecht, M.
B.A.,M.A.(York), Ph.D.(Dalhousie)
Professor of Global Development Studies
Cross-Appointed to History; Affiliated with Cultural Studies
Head, Global Development Studies

Erki, M.A.
B.A.Sc., M.A.Sc., Ph.D.(Toronto), P.Eng.
Adjunct Professor of Civil Engineering; Royal Military College

Errington, E.J.
B.A. (Trent), B.Ed. (Toronto), M.A., Ph.D. (Queen's)
Professor of History

Escobedo, C.
B.Sc. (National University of Mexico), M.A.Sc.(Toronto), Ph.D. (Victoria)
Assistant Professor of Chemical Engineering

Evans, H.C.
B.Sc., M.Sc.(Queen's) Ph.D.(Glasgow)
Professor Emeritus of Physics, Engineering Physics and Astronomy

Evans, G.A.
M.D. (Ottawa)
Associate Professor of Medicine
Cross-Appointed to Pathology and Molecular Medicine
Cross-Appointed to Biomedical and Molecular Sciences

Evans, P.A.
B.Sc. (Hons)(Newcastle Polytechnic), Ph.D. (Cambridge)
Professor of Chemistry
Canada Research Chair, Tier 1
Bader Chair in Organic Chemistry

Ewan, G.T.
B.Sc., Ph.D.(Edin.), F.R.S.C.
Professor Emeritus of Physics, Engineering Physics and Astronomy

Ewing, B.
B.A. (Brown), J.D. (Yale), M.A., Ph.D. (Princeton)
Assistant Professor of Law

F

Fabrigar, L.R.
A.A.(Maryland, Munich Branch), B.A.(Miami) M.A., Ph.D.(Ohio)
Professor of Psychology

Fachinger, P.
Staatsexamen (Bonn, Germany), Ph.D.(British Columbia)
Professor of English Language and Literature
Affiliated with Cultural Studies

Fairfield, P.
B.A. (McMaster), M.A. (Waterloo), Ph.D. (McMaster)
Professor of Philosophy

Fallah, V.
B.Sc., M.Sc. (Sharif University of Technology), Ph.D. (Waterloo)
Assistant Professor of Mechanical and Materials Engineering

Fam, A.Z.
B.Sc.(Alexandria), M.Sc., Ph.D. (Manitoba)
Professor of Civil Engineering
Canada Research Chair in Infrastructure Innovative and Retrofitted Structures

Fanning, C.
B.A., M.A.(Toronto) Ph.D.(CUNY)
Associate Professor of English Language and Literature

Farmer, J.
MD (Ottawa)
Cross-Appointed to Pathology and Molecular Medicine
Assistant Professor of Ophthalmology

Farmer, P.
B.A., M.D. (Queen's)
Assistant Professor of Pathology and Molecular Medicine

Farrar, E.
B.A., M.A., Ph.D.(Toronto)
Professor Emeritus of Geological Sciences and Geological Engineering

Farrelly, C.
B.A., M.A.(McMaster), Ph.D.(Bristol)
Professor of Political Studies
Cross-Appointed to Philosophy
on leave July-December 2018

Fayed, N.
B.ScH Kin (Waterloo), M.Sc. (OT) (Western), Ph.D. (McMaster)
Assistant Professor, School of Rehabilitation Therapy

Feilotter, H.
B.Sc., M.Sc., Ph.D.(Queen's)
Associate Professor of Pathology and Molecular Medicine

Fekken, G.C.
B.A., M.A., Ph.D.(Western Ontario)
Professor of Psychology

Feldman, M.A.
B.A.(CUNY) Ph.D.(McMaster)
Adjunct Associate Professor of Psychology

Feldman-Stewart, D.
M.A., Ph.D. (Queen's)
Adjunct Assistant Professor of Psychology

Fell, A.P.
B.A.(Toronto), B.Phil. (St. Andrews), A.M., Ph.D. (Columbia)
Professor Emeritus of Philosophy

Feng, W.
B.Sc. (Glasgow), M.Sc., (Shaanxi Normal University), Ph.D. (Hebei Normal University)
Adjunct Professor of Computing

Fergus, S.
B.Sc. (Georgetown), MPH (North Carolina), Ph.D. (Michigan)
Associate Professor of Kinesiology and Health Studies; Cross-Appointed to Public Health Sciences

Ferguson, A.V.
B.Sc.(Birmingham), Ph.D.(Calgary)
Professor of Biomedical and Molecular Sciences; Faculty in Neuroscience

Ferrall, C.
B.A.(Wyoming) Ph.D.(Minnesota)
Professor of Economics

Fichtinger, G.
B.Sc., M.Sc., Ph.D. (Budapest)
Professor of Computing

Cross-Appointed to Mechanical and Materials Engineering
Cross-Appointed to Electrical and Computer Engineering

Filion, Y.
B.A.Sc., M.A.Sc., Ph.D. (Toronto)
Assistant Professor of Civil Engineering

Finlayson, M.
BMR/OT, M.Sc., PhD. (Manitoba)
Vice-Dean (Health Sciences) and Director, School of Rehabilitation Therapy
Professor, School of Rehabilitation Therapy

Finley, G.E.
B.A., M.A.(Toronto) Ph.D.(Johns Hopkins)F.R.S.C.
Professor Emeritus of Art History

Finnen, R.L.
B.Sc. (Guelph), M.Sc. (British Columbia)
Adjunct Assistant Professor of Biomedical and Molecular Sciences

Fisher, J.T.
B.P.E.(Manitoba), M.H.K.(Windsor), Ph.D.(McGill)
Professor of Biomedical and Molecular Sciences; Cross-Appointed to Medicine
Cross-Appointed to Paediatrics

Fisk, G.
B.A. (Calgary), M.S. (Pennsylvania State)
Associate Professor of Industrial Relations

Fitneva, S.A.
B.A. (Smith College), Ph.D. (Cornell)
Associate Professor of Psychology

Fitzpatrick, L.
B.Eng. (McMaster), Ph.D. (Toronto)
Assistant Professor of Chemical Engineering

Fitzpatrick, M.F.
MB, BCh, BAO (Hons), DCH FRCPI, DM (Ireland), FRCPC (Sask.)
Professor of Medicine
Cross-Appointed to Biomedical and Molecular Sciences

Flanagan, W.F.
B.A.(Carleton), J.D. (Toronto), D.E.A.(Paris I), LL.M.(Columbia)
Dean of Law
Professor of Law

Flanagan, J.R.
B.P.E. (Alberta), M.A. Ph.D. (McGill)
Faculty in Neuroscience
Professor of Psychology
Cross-Appointed to Biomedical and Molecular Sciences

Flavin, M.P.
MB, FRCP (C) (University College Cork Ireland)
Faculty in Neuroscience
Cross-Appointed to Biomedical and Molecular Sciences

Flemming, J.
B.Sc .(St. Mary's), MAS (UCSF), MD (Dalhousie)
Assistant Professor of Medicine and Public Health Sciences
Assistant Professor of Translational Medicine
Cross-Appointed to Public Health Sciences

Flynn, L.
B.A. Sc., Ph.D.
Adjunct Assistant Professor of Chemical Engineering

Flynn, T.G.
B.Sc., M.Sc., Ph.D.(Wales), FRSC
Professor Emeritus of Biomedical and Molecular Sciences

Foley, A.M.
B.A., M.A.(McGill), Ph.D.(London)
Associate Professor of Classics

Forkert, P.G.
B.Sc. (Toronto), M.Sc., Ph.D. (Manitoba)
Professor Emeritus of Biomedical and Molecular Sciences

Forsdyke, D.R.
B.S., M.B.(London), B.A., Ph.D.(Cantab)
Professor Emeritus of Biomedical and Molecular Sciences

Forster-Gibson, C.
B.Sc. (Western Ontario), M.Sc. (Queen's), Ph.D. (Windsor), M.D. (Western Ontario)
Assistant Professor of Family Medicine
Faculty in Neuroscience

Fort, T.
B.A. (Amherst College), M.A., Ph.D.(Toronto)
Professor of Drama; Affiliated with Cultural Studies

Fortin, M.-J.
B.Sc. M.Sc. (Montreal), Ph.D. (New York at Stony Brook)
Adjunct Professor of Biology

Fox, M.A.
B.A. (Cornell), M.A., Ph.D. (Toronto)
Professor Emeritus of Philosophy

Frank, B.
B.Sc.E.(Hons.); M.Sc., Ph.D. (Queen's),P. Eng.
Professor of Electrical and Computer Engineering

Frank, K.
B.Sc., Ph.D. (Toledo)
Adjunct Assistant Professor of Biology

Franks, C.E.S.
B.A., M.A. (Queen's) D.Phil. (Oxon), F.R.S.C.
Professor Emeritus of Political Studies

Fraser, J.M.
B.Sc. (Waterloo), M.Sc., Ph.D. (Toronto)
Associate Professor of Physics, Engineering Physics and Astronomy

Frederickson, K.
B.Mus., Ed.(Colorado), M.Mus.(Oregon), Ed.D.(Arizona)
Associate Professor of the Dan School of Music

Freedman, C.D.
LL.B.(Osgoode), M.A.(Oxford), Ph.D (Cambridge)
Associate Professor of Law

Freedman, N.
B.Sc. (Ohio State), M.A., Ph.D. (Missouri)
Emeritus Professor of Psychology

Freundorfer, A.P.
B.A.Sc., M.A.Sc., Ph.D.(Toronto), P. Eng.
Associate Professor of Electrical and Computer Engineering

Friedman, J.
B.Sc. (Hons.), (Toronto), M.Sc. (Calgary), Ph.D., (Toronto)
Assistant Professor of Biology

Friesen, V.L.
B.Sc.(Hons.)(Prince Edward Island), M.Sc., Ph.D.(Memorial)
Professor of Biology; Cross-Appointed to Environmental Studies

Froese, A.B.
B.Sc.(Med), M.D.(Manitoba), FRCPC
Professor of Anaesthesiology
Cross-Appointed to Physiology

Frost, B.J.
B.A. (New Zealand), M.A. (Canterbury), Ph.D. (Dalhousie), F.C.I.A.R., F.R.S.C., F.A.A.A.S.
Faculty in Neuroscience
Professor Emeritus of Psychology

Fucile, S.
B.Sc., M.Sc. (McGill & Baylor), Ph.D. (McGill & Baylor)
Adjunct Assistant Professor, School of Rehabilitation Therapy
Adjunct Assistant Professor of Pediatrics

Funk, C.D.
B.Sc. (Queen's), Ph.D. (McGill), CCFP (Pennsylvania)
Professor of Biomedical and Molecular Sciences

G

Gagnon, L.
BBA, M.Sc (Sherbrooke), Ph.D (Toronto)
Professor, Smith School of Business

Gallivan, J.
B.A., M.Sc., Ph.D.(Western Ontario)
Assistant Professor of Biomedical and Molecular Sciences

Gallupe, R.B.
B.Math(Waterloo), M.B.A.(York), Ph.D.(Minnesota), CMA
Professor Emeritus, Smith School of Business

Gao, J.
B.Sc.(Wuhan), M.Sc. (Chinese Academy of Science), Ph.D. (California at Santa Barbara)
Professor of Physics, Engineering Physics and Astronomy

Garcia, A.
M.D., (Universidad Autonoma de Barcelona), Ph.D. (Alberta), FRCPC
Faculty in Neuroscience
Associate Professor of Medicine

Gardner, C.
C.D. (Queen's), M.H.Sc. (Toronto)
Adjunct Assistant Professor of Public Health Sciences

Garvie, D.
B.A.(Hons.) M.A.(Toronto) Ph.D.(California, Berkeley)
Associate Professor of Economics

Gazor, S.
B.Sc., M.Sc.(Isfahan) Ph.D.(ENST), P. Eng.
Professor of Electrical and Computer Engineering

Gedke-Kerr, L.
R.N., B.N.Sc., M.Sc. (Queen's)
Lecturer in Nursing

Gee, K.
B.Sc. (Manitoba), Ph.D. (Ottawa)
Associate Professor of Biomedical and Molecular Sciences

Gekoski, W.L.
B.A.(Franklin and Marshall) M.A., Ph.D.(Michigan)
Professor Emeritus of Psychology

Gemmill, I.
B.Sc., M.D.(Queen's)
Adjunct Associate Professor of Public Health Sciences

Gerbier, G.
Ph.D. (Universite Paris XI)
Professor of Physics, Engineering Physics and Astronomy

Ghahari, S.
B.Sc. (Iran Medical), M.Sc. (Univ. of Social Welfare and Rehabilitation Science), Ph.D. (Curtin)
Assistant Professor, School of Rehabilitation Therapy

Ghahreman, A.
B.Sc., M.Sc. (Sharif University of Technology), Ph.D. (British Columbia)
Assistant Professor of Mining Engineering

Gharesifard, B.
B.Sc., M.Sc. (Shiraz), Ph.D. (Queen's)
Assistant Professor of Mathematics and Statistics

Ghasemlou, N.
B.Sc, M.Sc. (Queen's), Ph.D. (McGill)
Assistant Professor of Biomedical and Molecular Sciences

Giacomin, A.J.
B.Sc., M.Sc. (Queen's), Ph.D. (McGill)
Professor of Chemical Engineering
Cross-Appointed to Mechanical and Materials Engineering
Canada Research Chair (Tier I) Rheology

Gilchrist, I.
B.Sc. Hon (Kin) (Waterloo), M.Sc. (PT), Ph.D. (Queen's)
Adjunct Assistant Professor, School of Rehabilitation Therapy

Gill, S.
B.Sc., M.S. (Toronto), M.D. (Western Ontario)
Associate Professor of Medicine
Associate Professor of Translational Medicine
Cross-Appointed to Public Health Sciences

Gilron, I.
MD (Ottawa), MSc (McGill), FRCPC
Faculty in Neuroscience
Cross-Appointed to Biomedical and Molecular Sciences

Gimblett, R.
Ph.D (Laval); MA (Trent); B.A. (RMC)
Adjunct Professor in History

Girouard, A.
Adjunct Assistant Professor in Computing

Giroux, G.
B.A., M.Sc. (Université de Montreal), Ph.D. (Universität Bern)
Assistant Professor of Physics, Engineering Physics & Astronomy

Gkotsis, T.
B.A. (Hons.) (Bishop's), MPL (Queen's)
Adjunct Lecturer in Geography and Planning

Glasgow, J.I.
B.Sc.(Alberta) M.Math., Ph.D.(Waterloo)
Professor Emeritus of Computing; Faculty in Neuroscience;

Glossop, N.
B.
Adjunct Assistant Professor of Computing

Glover, B.
MB Bch BAO, MD (Queen's Belfast), MEd (John Hopkins)

Associate Professor of Medicine
Assistant Professor of Translational Medicine

Glynn, P.A.R.
B.Eng.(R.M.C.) M.A.Sc., Ph.D.(Waterloo)
Adjunct Associate Professor of Public Health Sciences

Gobin, P.B.
L.ès L., D.E.S.(Paris) Agrégé de l'Université de France
Professor Emeritus of French Studies

Godfrey, C.
R.N., B.N.Sc, M.Sc., Ph.D. (Queen's)
Associate Professor of Nursing; Associate Professor of Health Quality
On sabbatical January 2018-December 2018

Godin, L.
B.Sc., M.Sc. (Universite du Quebec a Montreal), Ph.D. (Carleton)
Professor of Geological Sciences and Geological Engineering

Godlewska, A.
B.A.(McGill), M.A., Ph.D.(Clark)
Professor of Geography and Planning
On Leave July 1, 2018-December 31, 2018

Goebel, A.
B.A. (Toronto), M.A. (Saint Mary's), Ph.D. (Alberta)
Professor of Environmental Studies
Cross-Appointed to Sociology
Cross-Appointed to Global Development Studies
Affiliated with Cultural Studies
On sabbatical January 2019– June 2019

Goerzen, A.
B.Com.(Hons.)(Wilfrid Laurier), Ph.D. (Western Ontario)
Professor, Smith School of Business

Goheen, P.G.
B.A.(McMaster) M.A.(Clark) Ph.D.(Chicago)
Professor Emeritus of Geography and Planning

Goldberg, E.
B.A.(Western Ontario), M.A., Ph.D (Toronto)
Associate Professor of Religious Studies
Affiliated with Cultural Studies

Goldie, C.
R.N., B.N.Sc., M.Sc. (Queen'), Ph.D. (British Columbia)
Assistant Professor of Nursing

Good, D.
B.Sc., MD (Alberta)
Assistant Professor of Pathology and Molecular Medicine

Gooding, R.J.
B.Sc., M.Math.(Waterloo) Ph.D.(Toronto)
Professor of Physics, Engineering Physics and Astronomy

Goodyear-Grant, E.
B.A. (Calgary), M.A. (Dalhousie), Ph.D. (McGill)
Associate Professor of Political Studies

Gordon, D.L.A.
B.Sc., M.PL. (Queen's), M.B.A., D. Des. (Harvard) F.C.I.P., R.P.P., A.I.C.P., P.Eng.
Professor of Geography and Planning
On Leave January 1, 2019-June 30, 2019

Gordon, J.R.M.
B.A.Sc. (British Columbia), M.B.A. (Queen's), Ph.D. (MIT)
Professor Emeritus, Smith School of Business

Gordon-Solmon, K.
B.A. (McGill), M. Phil.(Cambridge), D. Phil. (Oxon)
Associate Professor of Philosophy

Graham, C.H.
B.Sc., M.Sc., Ph.D.(Western Ontario)
Professor of Biomedical and Molecular Sciences
Field Coordinator of Graduate Studies in Biomedical and Molecular Sciences
(Reproduction and Developmental Sciences)

Graham, H.C.
B.Comm.(Carleton), M.H.A.(Ottawa)
Adjunct Lecturer of Public Health Sciences

Graham, L.A.
B.Sc.(Alberta), Ph.D.(Queen's)
Adjunct Assistant Professor of Biomedical and Molecular Sciences

Graham, T.C.N.
B.Sc. (Toronto), M.Sc. (Queen's), Ph.D. (University of Berlin)
Professor of Computing
on leave July 2018-June 2019

Grahremaniezhad, A.
B.
Assistant Professor of Mining

Grant, J.A.
B.A., M.A. (Calgary), Ph.D. (Dalhousie)
Associate Professor of Political Studies

Grant , S.
B.
Adjunct Assistant Professor of Computing

Green, L.
B.A. (Queen's), M.A., M.Phil., D.Phil. (Oxford)
Professor of Law

Green, M.
B.Sc. (Simon Fraser), M.D. (British Columbia), M.P.H. (Johns Hopkins Bloomberg School of Public Health)
Cross-Appointed to Public Health Sciences

Green, M.F.
P.Eng., B.Sc. (Queen's) Ph.D. (Cantab)
Professor of Civil Engineering
Cross-Appointed to Mathematics and Statistics

Greenaway, K.
B.A. (Alberta), M.B.A. (Western), M.P.A., Ph.D. (Queen's)
Adjunct Lecturer, Smith School of Business

Greenfield, R.P.H.
B.D., PhD. (London)
Professor of History
Cross-Appointed to Classics

Greenspan, M.
B.Sc.Hons. (Toronto), B.A.Sc., M.A.Sc. (Ottawa), Ph.D. (Carleton), P. Eng.
Professor of Electrical and Computer Engineering
Head of Electrical and Computer Engineering
Cross-Appointed to Computing

Greenwood, M.T.
B.Sc., M.Sc. (Concordia), Ph.D. (McGill)
Adjunct Associate Professor of Biology

Greer, P.A.
B.Sc., Ph.D. (McGill)
Coordinator of Graduate Studies of Pathology and Molecular Medicine
Professor of Pathology and Molecular Medicine
Cross-Appointed to Biomedical and Molecular Sciences

Gregory, A.W.
B.A. (Toronto), M.A., Ph.D. (Queen's)
Professor of Economics

Grellor, L.D.
B.S. (Drexel), M.S., Ph.D. (Pennsylvania)
Adjunct Associate Professor of Biology

Griffith, R.D.
B.A., M.A., Ph.D.(Toronto)
Professor of Classics

Grogan, P.
B.A.H. (Dublin), Ph.D. (U.C. Berkeley)

Associate Professor of Biology
Canada Research Chair in Climate Change Effect on Northern Ecosystems

Groome, P.
B.F.A.(York), M.Sc., Ph.D.(McGill)
Professor of Public Health Sciences
Ph.D. Program Director, Public Health Sciences

Grûtter, A.S.
B.A. (California/Santa Barbara), Ph.D. (James Cook Univ. Queensland, Australia)
Adjunct Assistant Professor of Biology

Guay, M.
B.A.Sc., M.A.Sc. (Ottawa), Ph.D. (Queen's)
Professor of Chemical Engineering
Cross-Appointed to Mathematics and Statistics

Gueguen, C.
M.Sc (Western Brittney), Ph.D. (Geneva)
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Associate Professor of Chemistry Trent University

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Hagel, D.K.
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on leave January-June 2018

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Associate Professor of Gender Studies

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Hamilton, B.
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Hamm, J.J.
L.ès L., D.E.S., Doctorat IIIe Cycle (Strasbourg) F.R.S.C.
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Associate Dean of Faculty
Commerce ’77 Fellow of Marketing

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Cross-Appointed to School of Computing

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Professor of Computing

Hassanein, H.S.
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Professor of Computing
Cross-Appointed to Electrical and Computer Engineering

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Faculty in Neuroscience
Canada Research Chair in Visual Neurobiology and Behaviour

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Associate Professor of Translational Medicine
Cross-Appointed to Oncology
Cross-Appointed to Pediatrics

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Associate Professor of Translational Medicine

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Professor Emeritus of Chemistry

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Professor of Translational Medicine
Cross-Appointed to Pathology & Molecular Medicine
Cross-Appointed to Pediatrics

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Cross-Appointed to Pathology and Molecular Medicine

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Graduate Coordinator of Geological Sciences and Geological Engineering

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Canada Research Chair, Tier I

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Associate Professor of Statistics

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Cross-Appointed to Biomedical and Molecular Sciences

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Adjunct Associate Professor, University of Toronto

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Professor of Medicine

K

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Kalenchuk, K.
B
Adjunct, Mining Engineering

Kamphuis, J.W.
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Kan, F.W.K.
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Karan, K.
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Karton, J.D.H.
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Associate Professor of Law
Associate Dean (Graduate Studies and Research)

Katsabanis, P.D.
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Head, Robert M. Buchan Department of Mining

Kavanagh, B.J.
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Kay, F.M.
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Kilik, L .
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Head,English Language and Literature

King, W.
B.Sc.H.(Queen's), M.Sc.(McGill), Ph.D. (Toronto)
Graduate Coordinator in Public Health Sciences
Associate Professor of Public Health Sciences

Kirby, J.R.
B.A.(McGill), Ph.D.(Alberta)
Emeritus Professor of Education
Cross-Appointed to Psychology

Kisilevsky, R.
B.Sc., M.D., C.M.(McGill) Ph.D.(Pittsburgh), FRCPC
Professor Emeritus of Pathology and Molecular Medicine

Kisilevsky, B.S.
R.N., B.S.N., M.N. (Pittsburgh), M.A., Ph.D. (Queen's)
Professor Emeritus of Nursing; Cross-Appointed to Psychology

Kissick, P.
LL.B, LL.M. (Queen's)
Continuing Adjunct Associate Professor, Smith School of Business

Klempan, B.
AOCA (Toronto), B.Ed.(Queen's); Dipl. Restauratorin(Stuttgart)
Adjunct Associate Professor of Art Conservation

Klinger, D.A.
B.Sc., B.Ed.(British Columbia), Ph.D.(Alberta)
Adjunct Professor of Education

Knapper, C.K.
B.A.(Hons.)(Sheffield) Ph.D.(Saskatchewan) F.B.P.S.
Professor Emeritus of Psychology

Knight, D.
B.A., M.A.(Carleton) Ph.D.(Toronto)
Associate Professor of Philosophy
Queen's National Scholar

Knight, S.
B.Eng., M.Eng., (RMC) Ph.D. (Queen's)
Cross-Appointed to Computing
Assistant Professor of Electrical and Computer Engineering (RMC)

Knobel, R.G.
B.Sc. (Queen's), M.Sc. (British Columbia), Ph.D. (Pennsylvania State)
Associate Professor of Physics, Engineering Physics and Astronomy

Knowles, J.B.
B.Sc., Dip.Psychol., Ph.D.(London)
Professor Emeritus of Psychology

Knox, V.J.
B.A.(Bishop's) M.A., Ph.D.(Waterloo)
Professor Emeritus of Psychology

Knutsen, E.S.
B.A. (Hons.)(Lakehead), J.D. (Osgoode), LL.M. (Harvard)
Professor of Law
Associate Dean of Law (Academic)

Knutsen, W.
B.
Associate Professor of Health Quality

Ko, K.
B.Sc., M.Sc., Ph.D.(Toronto)
Professor of Biology

Kobayashi, A.
B.A., M.A.(British Columbia), Ph.D.(UCLA)

Professor of Geography and Planning
Affiliated with Cultural Studies

Koeppl, T.
Vordiplom (Eichstaett/Ing), Lic.rer.pol. (Basle), Ph.D. (Minnesota)
Assistant Professor of Economics

Kolsarici, C.
B.Com (Ankara), M.B.A.(Turkey), Ph.D. (McGill)
Associate Professor, Smith School of Business

Kontopoulou, M.
B.Sc.(Aristotle) M.Eng., Ph.D.(McMaster)
Professor of Chemical Engineering
Associate Head, Chemical Engineering

Korenberg, M.J.
B.Sc., M.Sc., Ph.D., B.C.L., LL.B.(McGill), P.Eng.
Professor of Electrical and Computer Engineering

Koti, M.
M.V.Sc., (Indian Veterinary Research Institute), Ph.D.(Guelph), DVM
Assistant Professor of Biomedical and Molecular Sciences

Kozin, I.
M.Sc., Ph.D.(Moscow State)
Adjunct Associate Professor of Chemistry

Krause, T.
B.Sc. (Calgary), M.Sc., Ph.D. (McMaster)
Cross-Appointed to Physics, Engineering Physics and Astronomy
Royal Military College

Krausse, H.K.
B.A., M.A.(Oregon) Ph.D.(Washington)
Professor Emeritus of German Language and Literature

Krupa, T.
B.Sc. (O.T.), M.Ed., Ph.D. (Toronto)
Professor Emeritus, School of Rehabilitation Therapy

Kueper, B.H.
B.A.Sc., Ph.D.(Waterloo), P.Eng.
Professor of Civil Engineering

Kuhlmeier, V.A.
B.A., B.S. (California, San Diego), M.A., Ph.D. (Ohio State)
Associate Professor of Psychology
Faculty in Neuroscience
Affiliated with Cultural Studies

Kukal, O.
B.Sc. (Hons.)(Carlton), M.Sc.(Guelph), Ph.D. (Notre Dame)
Adjunct Associate Professor of Biology

Kukreja, R.
B.A., M.A. (New Delhi), Ph.D. (Queen's)
Term Adjunct, Cultural Studies, Winter 2019
Affiliated with Cultural Studies

Kumar, P.
B.A.(Rajasthan) M.A., Ph.D.(Queen's)
Professor Emeritus of Policy Studies

Kumar, P.
B.A., M.A. (Delhi)
Continuing Adjunct Appointment in Global Development Studies

Kumar, R.
B.A. (Queen's), B.Phil., D. Phil. (Oxon)
Associate Professor of Philosophy
Queen's National Scholar

Kunnumkal, S.
B.A. (Indian Institute of Technology), M.A. (Massachusetts), Ph.D. (Cornell)
Associate Professor, Smith School of Business

Kunz, M.
B.
Adjunct Associate Professor of Computing

Kuo, G.
B.A., M.A. (Taiwan), M.A., Ph.D. (Western Ontario)
Adjunct Professor of Economics

Kurek, J.
B.Sc. (SUNY at Geneseo), M.Sc., Ph.D. (New Brunswick)
Adjunct Assistant Professor of Biology

Kutsyuruba , B.
Spec. Dip., B.A.(Chernivtsi National University, Ukraine), M.Ed., Ph.D. (Saskatchewan)
Associate Professor of Education

Kymlicka, W.
B.A. (Queen's), B.Phil., D.Phil.(Oxon)
Professor of Philosophy
Cross-Appointed to Political Studies; Cross-Appointed to Law
Canada Research Chair Tier I

Kyser, T.K.
B.Sc.(California, San Diego), M.Sc., Ph.D.(California, Berkeley)
Professor of Geological Sciences and Geological Engineering
Cross-Appointed to Environmental Studies

L

LaBarge, M.
B.Com., M.Sc. (Queen's), Ph.D.(Oregon)
Assistant Professor, Smith School of Business

Laforest, R.
B.A., M.Sc. (Montreal)
Associate Professor of Policy Studies; MPA Program Director

Lafrenière, M.
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Lahey, K.A.
B.A.(Illinois) J.D.(De Paul), LL.M.(York)
Professor of Law
Professor of Gender Studies; Affiliated with Cultural Studies

Lai, Y.
B.A. (Liaoning), MASC (Beijing Polytechnic), Ph.D. (Dalhousie)
Associate Professor of Mechanical and Materials Engineering

Lake, K.W.
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Professor of Astronomy and Astrophysics
Professor of Physics, Engineering Physics and Astronomy

Lamarche, P.
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Adjunct Professor of Civil Engineering; Royal Military College

Lamb, D.A.
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Associate Professor of Computing
on leave January 2018-June 2018

Lamb, M.
R.N., B.Sc.N.Ed. (Ottawa), M.N. (Alberta), Ph.D. (Toronto)
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Lamb, R.
B.Mus.Ed., M.Mus.Ed. (Portland), Ed.D.(Columbia)
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Lamoureux, S.
B.Sc.(Alberta), M.S.(Massachusetts Amherst), Ph.D. (Alberta)
Professor of Geography and Planning

Lamp ,N.
B.A. (Dresden), M.A. (Jacobs), LL.M., Ph.D. (LSE)
Assistant Professor of Law

Langlois, V.S.
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Lapham, B.J.
B.S.(Colorado), Ph.D.(Minnesota)
Professor of Economics

Latimer-Cheung, A.
B.Sc. (Ottawa), M.Sc. (McMaster), Ph.D. (Michigan)
Associate Professor of Kinesiology and Health Studies

Laughton, B.K.B.
B.A.(Hons.) M.A.(Oxon) A.M.A.(Museums Assoc.) Ph.D.(London), F.R.S.A.
Professor Emeritus of Art History

Law, M.
B.A. (Hons.), M.P.A., B.Sc. (P.T.) (Queen's)
Adjunct Lecturer, School of Rehabilitation Therapy

Laycock, H.
B.A.(Oxon)
Associate Professor of Philosophy

Layton-Matthews, D.
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Associate Professor of Geological Sciences and Geological Engineering

Layzell, D.B.
B.Sc.(Waterloo), M.Sc.(Guelph), Ph.D.(Western Australia)
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Adjunct Professor of Geography
Queen's Research Chair in Climate Change Biology and Plant Physiology

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LeBrun, D.
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Lederman, S.J.
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Faculty in Neuroscience
Cross-Appointed to Computing

Lee, D.
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Cross-Appointed of Pathology and Molecular Medicine

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Emeritus Professor of Education

Lee, E.Y.
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Professor of Geological Sciences and Geological Engineering

Leeming, F.
M.F.A.(Concordia)
Adjunct Associate Professor, Film and Media: Affiliated with Cultural Studies

Lees, R.E.M.
MB., Ch.B., D.P.H., M.D.(Glasgow) F.F.C.M., A.F.O.M., FRCPC
Professor Emeritus of Public Health Sciences

Lefebvre, D.D.
B.Sc.(Hons.)(Ottawa), M.Sc.(British Columbia), D.Phil.(Oxford)
Professor of Biology
Coordinator of Graduate Studies in Biology

Lefort-Favreau, J.
B.A., M.A. (Montreal), Ph.D. (UQAM)
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Affiliated with Cultural Studies

Leger, A.B.
B.P.E., B.Sc.(PT), M.Sc.(Western Ontario), Ph.D.(Toronto)
Assistant Professor of Rehabilitation Therapy
Assistant Professor of Rehabilitation Science
Cross-Appointed to Biomedical and Molecular Sciences

Leggett, W.C.
B.A.(Waterloo Uni. College), M.Sc., D.Sc.(Waterloo), Ph.D.(McGill)
Professor Emeritus of Biology

Lehoux, D.
B.A. (Waterloo), M.A., Ph.D. (Toronto)
Professor of Classics

Lehrer, S.F.
B.A.(McGill), Ph.D.(Pittsburgh)
Associate Professor of Policy Studies
Cross-Appointed to Economics

Leighton, S.R.
B.A., M.A.(Alberta) Ph.D.(Texas)
Professor of Philosophy

Leiss, W.
B.A. (Fairleigh Dickinson), M.A. (Brandeis), Ph.D.(California)
Professor Emeritus of Policy Studies

Lele, J.K.
B.A., M.A. (Poona), Ph.D. (Cornell)
Professor Emeritus of Political Studies
Professor Emeritus of Sociology
Professor Emeritus and Adjunct Professor of Global Development Studies

Lemieux, R.P.
B.A.(Colgate) Ph.D.(Illinois)

Adjunct Professor of Chemistry
Professor of Chemistry & Dean of Science University of Waterloo

LePage-Parenteau, P.
Faculty in Neuroscience

Leslie, J.R.
B.Sc.(Edin.) Ph.D.(Liverpool)
Professor Emeritus of Physics, Engineering Physics and Astronomy

Lessard, G.
B.A.(Hons.) M.A.(Queen's) Ph.D.(Laval)
Professor of French Studies
Cross-Appointed to School of Computing

Leung, H-L.
B.Arch. (Hong Kong), M.C.P.(MIT), M.Sc.(Cantab), Ph.D.(Reading), R.I.B.A., F.C.I.P., R.P.P.
Professor Emeritus of Geography and Planning

Leuprecht, C.
B.A.H. (Toronto), D.É.A. (Pierre Mendès-France), M.A. (Toronto), Ph.D. (Queen's)
Cross-Appointed to Political Studies
Associate Professor, Political Science, Royal Military College of Canada

Leverette, G.
B.A.H. (Kin) (Western Ontario), M.Sc. (P.T.) (Queen's)
Continuing Adjunct Lecturer, School of Rehabilitation Therapy

Lévesque, L.
B.A.(McGill), M.Sc., Ph.D.(Laval)
Professor of Kinesiology and Health Studies;
Associate Director and Coordinator of Graduate Studies in Kinesiology and Health Studies

Levina, T.
B.S. (Belarus), MBA, Ph.D. (Rutgers)
Associate Professor, Smith School of Business

Levin, Y.
B.S., M.S. (Belarus State), Ph.D. (Rutgers)
Professor, Smith School of Business

Levine-Rasky, C.
B.A., M.Ed., Ph.D. (York)
Associate Professor of Sociology
Cross-Appointed to Gender Studies; Affiliated with Cultural Studies

Levison, M.
B.Sc.(Uni.College, London), Ph.D.(Birkbeck College, London)
Professor Emeritus of Computing

Levit, B.
M.Sc. (Moscow Univ.) , Ph.D. (Russian Acad. of Sci), D.Sc. (Vilnius Univ.)
Professor of Mathematics and Statistics
Professor of Statistics

Lewis, A.D.
B.Sc.(New Brunswick) M.Sc., Ph.D.(California Institute of Technology)
Professor of Mathematics and Statistics

Lewis, F.D.
B.A.(McGill) M.A., Ph.D.(Rochester)
Professor of Economics

Lewis, M.A.
B.A.(Waterloo), M.A., Ph.D.(Toronto)
Emeritus Professor of Education

Leys, C.
M.A.(Oxon)
Professor Emeritus of Political Studies

Li, D.
B.Med.(China), M.P.H.(China), Ph.D.(Zurich)
Assistant Professor of Public Health Sciences

Li, G.
MS, (National University of Singapore), ME (Massachusetts), Ph.D. (USC)
Assistant Professor, Smith School of Business

Li, H.
B.S. (Beijing), Ph.D. (Chicago)
Associate Professor of Economics

Li, Q.
B.Sc., M.A.Sc. (Northwestern Polytechnical), Ph.D. (Simon Fraser)
Associate Professor of Mechanical and Materials Engineering
Cross-Appointed to Electrical and Computer Engineering

Li, X.
Assistant Professor of Chemical Engineering

Lilius, J.M.
B.Sc. (Western Ontario), M.A., Ph.D. (Michigan)
Associate Professor of Industrial Relations

Lillicrap, D.P.
M.B., B.S.(London), FRCPC
Professor of Pathology and Molecular Medicine
Cross-Appointed to Medicine
Cross-appointed to Translational Medicine

Lin, C.D.
B.Sc.(USTC), M.Sc., Ph.D. (Simon Fraser)
Associate Professor of Mathematics and Statistics
Associate Professor of Statistics

Linder, T.
M.Sc.(Tech. Univ. of Budapest)Ph.D.(Hungarian Academy of Sc.)
Professor of Mathematics and Statistics
Cross-Appointed to Electrical and Computer Engineering

Lindsay, R.C.L.
B.Sc.(Toronto), M.Sc., Ph.D.(Alberta)
Professor of Psychology

Liss, S.
B.Sc. (Hons.) (Western), M.Sc., PhD (Saskatchewan)
Adjunct and Emeritus Professor of Environmental Studies

Lister, A.
B.A., M.A. (McGill), Ph.D. (UCLA)
Associate Professor of Political Studies
Graduate Chair, Political Studies
Cross-Appointed to Philosophy

Litrico, J.-B.
B.Sc., M.Sc. (Université de Technologie de Compiègne, France)
Associate Professor, Smith School of Business

Little, M.
B.A. (King's College), M.A. (Queen's), Ph.D. (York)
Professor of Political Studies
Professor of Gender Studies
Affiliated with Cultural Studies

Litzgus, J.
B.Sc, M.Sc. (Guelph), Ph.D. (South Carolina)
Adjunct Assistant Professor of Biology

Liu, G.
B.Sc. (Nankai), M.Sc., Ph.D. (Toronto)
Professor of Chemistry
Canada Research Chair Tier 1

Liu, Y.-F.
B.A.Sc., M.A.Sc.(Zhejiang), Ph.D.(Queen's), P.Eng.
Professor of Electrical and Computer Engineering

Lloyd-Ellis, H.
B.Sc. (Hons.)(Southampton), M.A., Ph.D. (Queen's)
Head, Department of Economics
Professor of Economics

Lobb, E.
B.A.(Toronto) M.A.(Virginia) Ph.D.(Princeton)
Professor Emeritus of English Language and Literature

Lock, F.P.
B.A., M.A.(Cambridge), M.A., Ph.D.(McMaster)

Professor Emeritus of English Language and Literature
Queen's Research Chair

Logan, G.M.
B.Sc. Math (Carnegie-Mellon) A.M., Ph.D.(Harvard), LL.D. (Honoris Causa, Regina)
Professor Emeritus of English Language and Literature

Lomax, A.E.G.
B.Sc. (Ulster), Ph.D. (Melbourne)
Associate Professor of Medicine
Associate Professor of Biomedical and Molecular Sciences; Faculty in Neuroscience

Loock, H.P.
Dipl.-Ing (Darmstadt), Ph.D. (Victoria)
Professor of Chemistry
Head of the Department of Chemistry
Cross Appointed to Physics, Engineering Physics and Astronomy

Lord, S.
Ph.D. (York)
Associate Professor in Film Studies
Cross-Appointed Associate Professor in Art History
Affiliated with Cultural Studies

Lougheed, D.
B.Sc. (H.K) (Guelph), M.Sc.. (Queen's), MD (McMaster)
Professor of Medicine
Professor of Translational Medicine
Cross-appointed to Public Health Sciences
Cross-appointed to Biomedical and Molecular Sciences

Lougheed, S.
B.Sc., M.Sc.(Guelph), Ph.D.(Western Ontario)
Professor of Biology
Cross-Appointed to School of Environmental Studies
Director of QUBS

Lovelace, R.
M.

Retired Chief, Ardoch Algonquin First Nation; Continuing Adjunct Professor in Global Development Studies; Affiliated with Cultural Studies

Lovell , W.G.
M.A.(Glasgow), M.A., Ph.D.(Alberta)
Adjunct Professor Emeritus of Geography and Planning
Affiliated with Cultural Studies

Luce-Kapler, R.
B.Ed., M.Ed., Ph.D.(Alberta)
Professor of Education
Dean of the Faculty of Education

Luctkar-Flude, M.
R.N., B.Sc.N., M.Sc.N. (Ottawa), Ph.D.()
Assistant Professor in Nursing

Ludwin, S.K.
M.B., B.Ch.(Witwatersrand Medical School Johannesburg)
Professor Emeritus of Pathology and Molecular Medicine

Lyon, D.
B.Sc., Ph.D.(Bradford)
Professor of Sociology; Cross-Appointed to Law; Affiliated with Cultural Studies
On leave January – June 2019

Lysaght, R.
B.Sc. (Western Ontario), M.S. (North Texas State), Ph.D. (Ohio State)
Associate Director (Occupational Therapy Program)
Associate Professor, School of Rehabilitation Therapy

M

Ma, B.
B.
Adjunct Assistant Professor of Computing

Mabee, W.E.
B.A., M.A., Ph.D. (Toronto)
Professor and Head of Geography and Planning
Cross-Appointed to Policy Studies
Cross-Appointed to Environmental Studies
Director, Queen's Institute for Energy and Environmental Policy (QIEEP)
Canada Research Chair

MacArthur, J.D.
B.Sc.(Western Ontario) Ph.D.(McMaster)
Professor Emeritus of Physics, Engineering Physics and Astronomy

Macartney, D.H.
B.Sc., Ph.D. (Victoria)
Professor of Chemistry

MacDonald, T.K.
B.A.(Western Ontario) Ph.D.(Waterloo)
Associate Professor of Psychology

MacDonald, E.
B.A., M.A.(Carleton), Ph.D.(York)
Associate Professor of Political Studies; Affiliated with Cultural Studies
Academic Leave July 1, 2018-December 2018

MacDougall, C.
B.Sc.(St. Francis Xavier), B.A.Sc., M.A.Sc.(Waterloo), Ph.D.(Western Ontario)
Associate Professor of Civil Engineering

MacEachren, E.
BSc., B.Ed.(Lakehead), M.Sc.(Lesley College), Ph.D. (York)
Associate Professor of Education

MacEwen, G.H.
B.Eng.(McGill) M.Sc., Ph.D.(Toronto)
Professor Emeritus of Computing

Mackenzie, B.W.
B.Eng.(Hons.)(McGill) M.Sc.(Witwatersrand)Eng.Sc.D.(Columbia), P.Eng.
Professor Emeritus of Geological Sciences and Geological Engineering

MacKenzie, J.
M.D. (Toronto)
Assistant Professor of Paediatrics
Cross-Appointed to Pathology and Molecular Medicine
Cross-Appointed to Psychology

MacKenzie, L.W.
B.Sc. (Windsor), M.Sc., Ph.D. (McMaster)
Associate Professor of Biomedical and Molecular Sciences; Field Coordinator of Graduate Studies in Biomedical and Molecular Sciences (Anatomical Sciences)

MacKenzie, S.
B.A., M.A., Ph.D.(McGill)
Affiliated with Cultural Studies; Adjunct Professor of Film and Media

Mackey, C.
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Mackillop, W.
B.Sc., M.B., Ch.B.(Glasgow)
Adjunct Professor of Public Health Sciences

MacKinnon, J.G.
B.A.(York) M.A., Ph.D.(Princeton), F.R.S.C.
Professor of Economics
Sir Edward Peacock Professor of Econometrics

Maclachlan, D.L.C.
M.A.(Glasgow) M.A.(Yale) Ph.D.(Glasgow)
Professor Emeritus of Philosophy

MacLean, A.W.
M.A.(Aberdeen), M.A., Ph.D.(Queen's)
Professor of Psychology
Dean, Faculty of Arts and Science

Macleod, A.M.
M.A.(Glasgow) Ph.D.(Queen's)
Professor Emeritus of Philosophy

MacLeod, R.J.
B.Sc.(Western Ontario), Ph.D.(McGill)
Associate Professor of Biomedical and Molecular Sciences
Cross-Appointed to Medicine

Magnusson, D.N.
B.Com.(Hons.)(Manitoba) LL.B.(Queen's), LL.M.(Michigan)
Professor Emeritus of Law

Magoski, N.S.
B.Sc. (Saskatchewan), Ph.D. (Calgary)
Professor of Biomedical and Molecular Sciences
Field Coordinator of Graduate Studies in Biomedical and Molecular Sciences (Experimental Medicine)
Faculty in Neuroscience

Magpantay, F.
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Assistant Professor of Mathematics and Statistics

Mah, H.
B.A.(Calgary) M.A., Ph.D.(Stanford)
Emeritus Professor of History

Majumdar, S.
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Majury, A.L.S.
B.Sc., M.Sc., DVM (Guelph), Ph.D. (Queen's)
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Mak, A.S.
B.Sc., M.Sc., Ph.D.(Manitoba)
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Mak, H.B.
B.Sc.(McGill) Ph.D.(Cal.Tech.)
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Malcolmson, R.W.
B.A.(Toronto),,M.A.(Sussex), MA.(Adler), Ph.D.(Warwick)
Professor Emeritus of History

Malsch, B.
M.A.(Audencia Nantes), M.B.A., Ph.D. (Laval)
Associate Professor, Smith School of Business

Manduch, M.
B.Sc., M.D.(Toronto)
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Mansouri, A.-R.
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Associate Professor of Mathematics and Statistics
Chair of Mathematics and Engineering in Mathematics and Statistics
on leave July 2018-June 2019

Mao, Y.
B.Sc.(China) M.Sc.(Alberta) Ph.D.(Western Ontario)
Adjunct Associate Professor of Public Health Sciences

Marin, A.
Faculty in Neuroscience

Marshall, J.
B.Sc., M.Sc.(Queen's), Ph.D. (Toronto), P. Eng.
Associate Professor of Mining Engineering
Cross-Appointed to Mechanical and Materials Engineering
Cross-Appointed to Electrical and Computer Engineering

Marshall, W.L.
B. Psych. Hons (Western Australia), M.Sc.(London), Ph.D.(Queen's)
Professor Emeritus of Psychology

Marshall, A.J.
M.A., M.Litt.(Oxon)
Professor Emeritus of Classics

Martel, S
B.A. (Montréal), M.Sc. (Université Lumière Lyon II), Ph.D. (Montréal)
Assistant Professor of Political Studies

Martin, A.K.
Adjunct Associate Professor of Education

Martin, L.J.
B.A. (Hons.), M.A. Ph.D. (Western Ontario)
Associate Professor of Kinesiology and Health Studies

Martin, N.L.
B.Sc., M.Sc.(Guelph) Ph.D.(British Columbia)
Associate Professor of Biomedical and Molecular Sciences
Field Coordinator of Graduate Studies in Biomedical and Molecular Sciences (Microbes, Immunity and Inflammation)

Martin, P.R.
B.Sc. (Queen's), M.Sc. (Montana), Ph.D. (Washington)
Associate Professor of Biology
Baillie Family Chair in Conservation Biology

Martin, R.D.
B.Sc., M.Sc., Ph.D. (Queen's)
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Martin, T.P.
B.Sc.(Toronto) M.Sc.(Queen's) Ph.D.(Toronto)
Professor of Computing

Martyn, B.
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Affiliated with Cultural Studies

Maslove, D.
B.Sc. (Guelph), M.D. (Toronto), M.Sc. (Stanford)
Assistant Professor of Medicine
Assistant Professor of Critical Care
Assistant Professor of Translational Medicine
Cross-Appointed to School of Computing

Mason, R.
B.Sc.(Hons.)(Durham)M.Sc.(Newcastle-Upon-Tyne), Ph.D.(Witwatersrand)
Professor Emeritus of Geological Sciences and Geological Engineering

Massey, T.E.
B.Sc.(Western Ontario), Ph.D.(Queen's)
Professor of Biomedical and Molecular Sciences; Field Coordinator of Graduate Studies in Biomedical and Molecular Sciences (Therapeutics, Drug Development and Human Toxicology);
Cross-Appointed to School of Environmental Studies

Masuda, J.
B.Sc., M.Sc. Ph.D. (Alberta)
Associate Professor of Kinesiology and Health Studies
Cross-Appointed to Geography and Planning
Affiliated with Cultural Studies

Matheson, I.
B.Sc.(Trent), B.Ed., M.Ed., Ph.D. (Queen's)
Assistant Professor of Education

Matovic, M.D.
M.Sc.(Belgrade), Ph.D.(Queen's)

Assistant Professor of Mechanical and Materials Engineering
MEng Graduate Program Coordinator

Matrix, S.
M.A. (Western Ontario), Ph.D.(Minnesota)
Affiliated with Cultural Studies; Associate Professor of Film and Media

Matthews, J.
M.A. (U.K.), M.B., B.Chir. (U.K.)
Professor of Medicine
Cross-Appointed to Pathology and Molecular Medicine

Maur, M.J.
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Continuing Adjunct Assistant Professor of Law

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B. Sc.(Carleton), Ph.D.(McMaster)
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Cross-Appointed to Pathology and Molecular Medicine
Cross-appointed to Translational Medicine

McAuley, K.B.
B.A.Sc.(Waterloo), Ph.D.(McMaster)
Professor of Chemical Engineering

McCarthy, D.D.P.
B.E.S. (Waterloo), M.E.S. (Wilfrid Laurier), Ph.D. (Waterloo)
Adjunct Faculty in Environmental Studies

McCaughey, J.H.
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McColl, M.A.H.
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Professor, School of Rehabilitation Therapy
Cross-Appointed to Public Health Sciences

McCormack, N.
B.A. (Waterloo), M.A. (McMaster), M.L.I.S. (Western Ontario), J.D. (Toronto), LL.M.

(York)
Associate Professor of Law

McCowan, J.D.
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Professor Emeritus of Chemistry

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Professor Emeritus of History

McDermott, M.
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Cross-Appointed to Geography and Planning
Cross-Appointed to Environmental Studies

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McKegney, S.
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Affiliated with Cultural Studies

McKenna, T.F.L.
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Adjunct Professor of Chemical Engineering

McKinnon, S.D.
B.A.Sc., M.A.Sc. (Toronto), Ph.D.(Witwatersrand), P. Eng.
Professor of Mining Engineering
Cross-Appointed to Geological Sciences and Geological Engineering

McKittrick, K.
B.A., M.A., Ph.D. (York)
Associate Professor of Gender Studies
Cross-Appointed to Geography and Planning
Affiliated with Cultural Studies

McLatchie, Wm.
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McLay, D.B.
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McLellan, P.J.
B.Sc.(Queen's), M.A.Sc.(Waterloo), Ph.D.(Queen's)
Professor of Chemical Engineering
Cross-Appointed to Mathematics and Statistics
Cross-Appointed to Statistics

McLean, L.
B.Sc. (PT) (McGill), M.Sc., Ph.D. (New Brunswick)
Adjunct Professor of Rehabilitation Science

McNairn, J.
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Associate Char, Department of History

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Professor of Nursing
Director of the School of Nursing
Associate Dean in Health Sciences
Cross-Appointed to Public Health Sciences
Cross-Appointed to School of Rehabilitation Theory

Meisel, J.
B.A., M.A.(Toronto) Ph.D.(London) F.R.S.C.LL.D.(Brock) LL.D.(Guelph) D.U.(Ottawa)
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Meligrana, J.F.
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Coordinator of Graduate Studies in Planning

Menard, J.
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Mennell, D.J.
B.A., M.A.(British Columbia), A.M., Ph.D.(Stanford)
Affiliated with Cultural Studies

Mercier, A.
B.A., M.A.(Ottawa) M.A., Ph.D. (Philosophy)(UCLA), M.A., CPhil.(Linguistics)(UCLA)
Associate Professor of Philosophy
Queen's National Scholar

Mester, Z.
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NRC

Metcalf, C.
B.A. (Hons.)(Queen's), M.A., Ph.D. (British Columbia), LL.B. (Queen's), LL.M. (Yale)
Associate Professor of Law

Mewhort, D.J.K.
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Professor Emeritus of Psychology

Meyer, R.
MD (McMaster)
Professor of Oncology
Cross-Appointed to Public Health Sciences

Miao, Q.
MD (China), M.Sc., Ph.D.(Queen's)
Adjunct Assistant Professor of Public Health Sciences

Miki, B.L.A.
B.Sc.(Toronto) Ph.D.(Carleton)
Adjunct Professor of Biology

Milev, R.
Faculty in Neuroscience; Cross-Appointed to Psychology

Miller, J.
B.Sc. (Kin), M.Sc. (P.T)., Ph.D. (McMaster)
Assistant Professor, School of Rehabilitation Therapy

Miller, J.
B.A. (Carleton College), M.A. (Wisconsin), Ph.D. (Toronto)
Associate Professor of Philosophy

Miller, J.
B.A., M.A. (Cambridge), Ph.D.(Boston)
Cross-Appointed to Languages, Literatures and Cultures
Affiliated with Cultural Studies
on leave January - December 2018

Milne, F.
B.Ec., M.Ec.(Monash) Ph.D.(Australian National)
Professor of Economics

Miners, C.
B.Sc.(Hons.)(McGill), Ph.D. (Toronto)
Associate Professor, Smith School of Business

Mingo, J.A.
B.Sc.(Dalhousie), M.Phil.(Edinburgh), Ph.D.(Dalhousie)
Head of Mathematics and Statistics
Professor of Mathematics and Statistics

Minnes, P.M.
B.A.(Queen's), M.Phil.(Edinburgh), Ph.D.(York)
Professor Emeritus of Psychology

Mitchell, R.J.
P.Eng., B.A.Sc.(Waterloo) Ph.D.(Cantab)
Professor Emeritus of Civil Engineering

Mody, D.
B.Sc.(Hons.)(Queen's)
Lecturer in Chemical Engineering

Möllers, N.T.
Diplom, M.A. (PassaU), Ph.D. (Potsdam)
Assistant Professor of Sociology

Molina, I.
B.Sc. (National University of La Plata), Ph.D. (Michigan State)
Adjunct Assistant Professor of Biology

Mombourquette, M.
B.Sc., M.Sc., Ph.D.(Saskatchewan)
Adjunct Associate Professor of Chemistry

Monaghan, J.
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Assistant Professor of Biology

Monestier, T.J.
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Assistant Professor of Law

Moneta, F.
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Monkman, L.G.
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Professor Emeritus of English Language and Literature

Montgomerie, R.D.
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Queen's Research Chair

Moore, E.G.
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Canada Research Chair

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Adjunct Professor of Public Health Sciences

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Academic Leave July 1-December 31, 2018

Moore-Daigle, J.
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Morehead, A.
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Moriah, K.
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Morris, G.P.
B.Sc., M.Sc.(British Columbia), Ph.D.(Queen's, Belfast)
Professor Emeritus of Biology

Morrison, R.
B.A. (Lethbridge), M.Phil.(Oxford), Ph.D. (Edinburgh)
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Queen's National Scholar

Morrow, W.S.
B.A., M.A. (Toronto), M.Div. (Knox), Ph.D. (Toronto)
Professor of Religious Studies

Mosco, V.
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Professor Emeritus of Sociology

Mosey, N.J.
B.Sc., Ph.D. (Western Ontario)
Associate Professor of Chemistry
Acting Associate Dean of Arts and Science

Mosurinjohn, S.C.
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Mousavi, P.
B.Sc. (Tehran), M.Sc. (Imperial College, London), Ph.D. (British Columbia)
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Professor of Biology
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Mozersky, J.
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Associate Professor of Philosophy
Cross-appointed to School of Computing
Canada Research Chair Tier II

Mueller, C.R.
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Professor of Biomedical and Molecular Sciences
Cross-Appointed to Pathology and Molecular Medicine

Mufti, S.
B.Sc.(McMaster), MBA(Queen's), Ph.D. (McGill)
Continuing Adjunct Associate Professor, Smith School of Business

Muir, D.W.
B.Sc., M.Sc.(Eastern Michigan)Ph.D. (Dalhousie)
Professor Emeritus of Psychology

Mullan, D.J.
LL.B., LL.M.(Victoria, N.Z.) LL.M.(Queen's)
Professor Emeritus of Law

Mulligan, L.
B.Sc.(New Brunswick), Ph.D.(Queen's)
Professor of Pathology and Molecular Medicine

Cross-Appointed to Paediatrics
Cross-Appointed to Biomedical and Molecular Sciences

Mulligan, R.
B.A.Sc.(Queen's), M.A.Sc.(British Columbia), Ph.D.(Dalhousie)
Assistant Professor of Civil Engineering

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B.A. (West Indies), M.Sc. (London School of Economics), Ph.D. (McGill)
Associate Professor of Geography and Planning

Murakami Wood, D.
B.A. (Hons.) (Oxford), M.Sc./Ph.D. (Newcastle)
Associate Professor of Sociology
Cross-Appointed to Geography and Planning
Affiliated with Cultural Studies

Murphy, P.
B.Sc. (Minnesota), M.B.A. (Kellogg), Ph.D. (Wisconsin-Madison)
Associate Professor, Smith School of Business
E. Marie Shantz Fellow in Accounting, Smith School of Business

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Murray, A.
B.Sc. (Hons.) (McGill), M.Sc.Eng., Ph.D. (Johns Hopkins)
Associate Professor of Art Conservation
Graduate Coordinator, Art Conservation

Murray, A.
B.Sc. (Hons.) (McGill), M.Sc.Eng., Ph.D. (Johns Hopkins)
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B.Sc., M.B.A. (Queens), Ph.D. (Western)
Associate Professor, Smith School of Business
Associate Dean of MBA and Masters Programs, Smith School of Business
Director QCED/QCBV and CIBC Faculty Fellow in Entrepreneurship, Smith School of Business

Murray, L.
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Murty , M.R.
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Professor of Mathematics and Statistics
Cross-Appointed to Philosophy
Queen's Research Chair

Muscedere, J.G.
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Professor, Critical Care Medicine
Cross-appointed to School of Rehabilitation Therapy

Myers, M.J.
B.A., M.A., Doctoral de Ille Cycle(Strasbourg)
Professor of Education

Myers, N.M.
B.A. (Guelph), M.A., Ph.D. (Toronto)
Assistant Professor of Sociology

N

Naaman, D.
B.F.A.,(Tel Aviv), M.F.A. (Syracuse), Ph.D.(Alberta)
Associate Professor of Film and Media: Cross-Appointed to Gender Studies; Affiliated with Cultural Studies

Nagy, M.
B.
Adjunct Assistant Professor of Computing

Nakatsu, K.
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Nasser, N.H.
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Neave, E.H.
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Professor Emeritus, Smith School of Business; Cross-Appointed to Economics

Neder, J.A.
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Cross-Appointed to Biomedical and Molecular Sciences

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Associate Professor, School of Rehabilitation Therapy
Faculty in Neuroscience

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Professor Emeritus of Chemistry

Nossal, K.R.
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Professor of Political Studies
Cross-Appointed to Policy Studies

Notash, L.
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Professor of Mechanical and Materials Engineering

Noureldin, A.
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Cross-Appointed to Electrical and Computer Engineering

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Professor of Chemistry
Professor of Physics, Engineering Physics and Astronomy
Canada Research Chair Tier I

O

O'Callaghan, C.J.
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O'Donnell, D.E.
MB, BcH, BAO,MD (National University of Ireland) MRCP(I), FRCPC, FCCP
Professor of Medicine
Professor of Rehabilitation Medicine
Professor of Translational Medicine
Cross-Appointed to Biomedical and Molecular Sciences
Cross-Appointed to Kinesiology and Health Studies

O'Farrell, L.
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CCSEO

Oleschuk, R.D.
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B.Sc. (Toronto), M.Sc., Ph.D. (McGill)
Professor of Psychology; Associate Head, Department of Psychology
Faculty in Neuroscience
Cross-Appointed to Biology
Cross-Appointed to Biomedical and Molecular Sciences

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Cross-Appointed to Rehabilitation Science

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Assistant Professor of Environmental Studies
Assistant Professor of Biology

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Assistant Professor of Biomedical and Molecular Sciences
Assistant Professor of Translational Medicine

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Osanic, P.M.
B.A. (British Columbia), J.D., LL.M. (Queen's)
Continuing Adjunct Assistant Professor of Law

Osborne, B.S.
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Professor Emeritus of Geography

Ossenburg, N.
Professor Emeritus of Anatomy and Cell Biology

Oteafy, S.
M)
Adjunct Assistant Professor of Computing

Othman, M.
MB., Bch., M.Sc. (Mansoura), Ph.D. (Southampton)
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Ouellette-Kuntz, H.
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Professor of Public Health Sciences
Faculty in Neuroscience

Ovchinnikov, A.
Ph.D.(Toronto)
Associate Professor, Smith School of Business

Overall, C.D.
B.A., M.A., Ph.D.(Toronto)
Professor Emerita of Philosophy

Owen, J.A.
B.Sc., M.Sc., Ph.D.(Queen's)
Cross-Appointed to Biomedical and Molecular Sciences

Oyewumi , K.L.
BSc, MB, BS (Ibadan, Nigeria), DPsych (Ottawa), FWACP, FMCPsych, DABPN, FRCPC
Faculty in Neuroscience
Cross-Appointed to Biomedical and Molecular Sciences

Ozolins, T.R.S.
M.Sc.(Toronto), Ph.D. (McGill)
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P

Packalen, K.
B.A.(Wellesley) M.A., Ph.D.(Stanford)
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Page, S.C.
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Professor Emeritus of Political Studies

Page, J.A.
B.Sc., M.Sc.(McMaster) Ph.D.(Harvard)
Professor Emeritus of Chemistry

Pak, M.
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Affiliated with Cultural Studies

Pan, S.
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Pande, I.
B.A. (St. Stephen's College, University of Delhi), M.S. (Jawaharial Nehru), M.A., Ph.D. (Princeton)
Associate Professor of History

Pang, S.C.
B.Sc.(Manitoba) M.Sc., Ph.D.(Memorial)
Professor of Biomedical and Molecular Sciences

Pang, A.S.D.
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Pappano, M
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Pardy, B.B.
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Parent, J.S.
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Cross Appointed to Chemistry

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Professor of Health Quality

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B.Sc.(Hon.), M.D.(Queen's) FRCPC
Professor of Medicine
Professor of Translational Medicine
Cross-Appointed to Biology
Cross-Appointed to Biomedical and Molecular Sciences

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B. Math (Waterloo), Ph.D. (Victoria)
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Associate Professor, School of Rehabilitation Therapy
Cross-Appointed to Kinesiology and Health Studies
Faculty in Neuroscience

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B.Sc., M.Sc., (Lanzhou), Ph.D (Newcastle)
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Cross-Appointed to Mathematics and Statistics
Director, Collaborative Program in Biostatistics

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Peppin, P.J.
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Professor of Law
Cross-Appointed to Medicine

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B.Sc., M.Sc. (Queen's), Ph.D. (Royal Military College)
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Cross-Appointed to Mechanical and Materials Engineering

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B.
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Cross-Appointed to the School of Environmental Studies

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Assistant Professor of Psychology
Cross-appointed to School of Computing

Posse, E.
B.
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Cross-Appointed to Gender Studies: Affiliated with Cultural Studies

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Cross-Appointed to Philosophy

Price, R.R.
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Przychodzen, J.
Professeurs adjoints in French Studies

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Cross-Appointed to Biomedical and Molecular Sciences

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Puskas, J.
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Lanxess Professor of Polymer Science, University of Akron

Puxty, J.
M.B., Ch.B.(Leeds Metropolitan), M.R.C.P Medicine (Glasgow), F.R.C.P. Geriatrics (Queen's)
Associate Professor of Medicine
Cross-appointed to School of Rehabilitation Therapy

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Q

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Quinsey, V.L.
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Cross-Appointed to Biology

R

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on leave January 2018-June 2018

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Raymond, G.P.
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Cross-Appointed to Biomedical and Molecular Sciences

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Professor Emeritus of German Language and Literature

Reeves, M.B.
B.Sc.H., B.A. (Victoria); M.Sc. (Alberta); M.A. (Victoria); Ph.D. (SUNY Buffalo)
Associate Professor in Classics

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Reifel, C.W.
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Reimer, K.J.
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Department of Chemistry and Chemical Engineering, Royal Military College

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Rewa, N.
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Affiliated with Cultural Studies; Professor of Drama

Reyes, M.C.
B.A. (Arizona), Maitrise, Ph.D. (Cornell)
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Robertson, G.J.
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Professor of Biology
Cross-Appointed to Biomedical and Molecular Sciences; Cross-Appointed to Psychology; Faculty in Neuroscience

Robinson, D.
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Associate Professor of Law

Robinson, D.
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Assistant Professor and Canada Research Chair in Indigenous Arts
Assistant Professor in Gender Studies; Affiliated with Cultural Studies
Cross-Appointed to Global Development Studies
Cross-Appointed to Art History

Robinson, I.
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Cross-Appointed to Public Health Sciences
Canada Research Chair

Ross, A.C.
B.Sc. (Auckland), Ph.D. (Alberta)
Assistant Professor of Chemistry

Ross, R.
B.Ed.(McGill), M.Sc., Ph.D.(Montreal)
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Professor of Health Quality
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S

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Salomaa, K.T.
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Salterio, S.
C.A. (Ontario and N.B.), BComm (Mount Allison), Ph.D. (Michigan)
Professor, Smith School of Business, Professor, PriceWaterhouseCoopers/Tom O'Neill Faculty Research Fellow in Accounting; Director, CA-Queen's Centre for Governance

Salverson, J.
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Salzmann, A.
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Cross-Appointed to Global Development Studies

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Cross-Appointed to Geography and Planning

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Coordinator of Graduate Studies in Geography
Canada Research Chair in Greenhouse Gas Dynamics and Ecosystem Management
(2005-2015)

Searle, M.
B.A.(Western), B.Ed., M.Ed., Ph.D.(Queen's)
Assistant Professor of Education

Sears, K.
B.Sc.n. (Hons.)(Ryerson), M.N., Ph.D. (Toronto)
Associate Professor of Nursing
Associate Director (Master of Science in Health Quality)
Associate Professor of Health Quality

Selbie, D.
B.Sc., Ph.D. (Queen's)
Adjunct Assistant Professor of Biology

Seitz, D.
B.Sc., MD (Saskatchewan), Ph.D.(Toronto), FRCPC
Cross-Appointed to Public Health Sciences

Selinger, J.
B.Sc., M.Sc. (Queen's), Ph.D. (Simon Fraser)
Assistant Professor in Kinesiology and Health Studies

Sellens, R.W.
B.Sc., M.Sc., Ph.D.(Waterloo)
Associate Professor of Mechanical and Materials Engineering

Sen, P.C.
B.Sc., M.Sc. (Tech.) (Calcutta) M.A.Sc., Ph.D. (Toronto)
Professor Emeritus of Electrical and Computer Engineering

SenGupta, S.
B.Sc., M.D.(Ottawa)
Professor of Pathology and Molecular Medicine

Sephton, P.
B.A. Hons (McMaster) M.A., Ph.D. (Queen's)
Professor, Smith School of Business

Seroude, L.
B.Sc., M.Sc., Ph.D. (P. Sabatier)
Associate Professor of Biology

Sharkawy, A.
B.Sc. Hons. (Toronto), B.Ed. (McGill), MA, Ph.D. (OISE/Toronto)
Associate Professor of Education

Shastri, B.J.
B.Eng, M.Eng, Ph.D. (McGill)
Assistant Professor of Physics, Engineering Physics & Astronomy

Shatkay, H.
B.Sc., M.Sc. (Hebrew University), Ph.D. (Brown)
Adjunct Associate Professor of Computing

She, Z.
M.Sc. (Leeds), Ph.D. (St. Andrews)
Assistant Professor of Chemistry

Shearer, T.
B.B.A., Ph.D.(Iowa), CPA
Associate Professor, Smith School of Business

Shelley, W.
M.D., M.Sc.(Queen's)
Adjunct Professor of Public Health Sciences

Shepherd, L.E.
B.Sc.(Bishop's) M.D.(McGill)
Professor of Pathology and Molecular Medicine
Cross-Appointed to Medicine
Cross-Appointed to Oncology

Shiell, R.
B.A. (Oxford), Ph.D. (Newcastle)
Adjunct Assistant Professor of Physics, Engineering Physics and Astronomy
Trent University

Shihab, E.
B.
Adjunct Assistant Professor of Computing

Shimotsu, K.
B.A., M.A.(Tokyo), M.A., M.Phil., Ph.D. (Yale)
Associate Professor of Economics

Shin, S.H.
B.Sc., M.Sc.(Seoul) Ph.D.(Manitoba)
Professor Emeritus of Biomedical and Molecular Sciences

Shoemaker, K.L.
B.Sc. (Hons.), M.Sc. (Queen's), Ph.D. (Dalhousie)
Adjunct Assistant Professor of Biology

Shortt, S.
B.A.(McGill), M.A.(Carleton), Ph.D., M.P.A.(Queen's), M.D.(Western)
Professor of Public Health Sciences
Cross-Appointed to Policy Studies
Director, Centre for Health Services and Policy Research

Shulha, L.
B.A., B.P.E.(McMaster), Dip.Ed.(Western Ontario) ,M.Ed.(Queen's), Ph.D.(Virginia)
Emeritus Professor of Education

Shurr, J.
B.A., M.S., Ph.D. (Purdue)
Associate Professor of Education

Shurvell, H.F.
B.Sc.(Exeter) M.Sc., Ph.D.(British Columbia), D.Sc.(Exeter)
Professor Emeritus of Chemistry
Adjunct Professor of Art Conservation

Siemens, D.R.
MD, (Queen's), FRCSC
Cross-Appointed to Biomedical and Molecular Sciences

Siemens, G.
B.Sc.(Eng.), Ph.D.(Manitoba)
Cross-Appointed to Civil Engineering; Royal Military College

Siljak, A.
B.A. (Stanford), M.A., Ph.D. (Harvard)
Associate Professor of History

Silverman, R.
B.A.(Toronto) M.A., Ph.D.(Pennsylvania)
Professor Emeritus of Sociology

Simmons, S.J.
B.Sc., M.Sc., Ph.D.(Queen's), P. Eng.
Associate Professor of Electrical and Computer Engineering

Simpson, C.
B.Sc. (New Brunswick), MD (Dalhousie)
Professor of Medicine
Professor of Translational Medicine

Sinclair, D.G.
D.V.M, V.S. (Ontario Veterinary College), M.S.A. (Toronto), Ph.D. (Queen's)
Professor Emeritus of Biomedical and Molecular Sciences

Singh, A.N.
BSc, MB, BS (Bihar), FRCPC, FRCPsych, DMP (London)
Faculty in Neuroscience

Sismondo, S.
B.A., M.A.(Toronto), M.A., Ph.D.(Cornell)
Professor of Philosophy
Cross-Appointed to Sociology; Affiliated with Cultural Studies

Sivilotti, M.L.A.
MD, MSc (Queen's), FRCPC, FACEP
Cross-Appointed to Biomedical and Molecular Sciences

Skaburskis, A.
B.Arch.(McGill), M.Arch, M.C.P., Ph.D., (U.C. Berkeley)
Professor Emeritus of Geography and Planning

Skillicorn, D.B.
B.Sc.(Sydney), Ph.D.(Manitoba)
Professor of Computing

Smart, C.
B.A.H. (Toronto)
Adjunct Assistant Professor, English Language and Literature
Affiliated with Cultural Studies

Smith, C.
B.Sc. (Manitoba), M.A., Ph.D. (Waterloo)
Adjunct Assistant Professor in Psychology

Smith, G.E.
A.R.C.T. (Piano), B.A., M.A., Ph.D. (Toronto)
Professor of Music; Associate Dean, Arts and Science, Affiliated with Cultural Studies

Smith, G.G.
B.Sc.(Hons.)(Queen's), M.A. (Brandeis), Ph.D. (Berkeley)
Professor of Mathematics and Statistics
on leave July 2018-June 2019

Smith, G.N.
M.D., Ph.D.(Western Ontario)
Faculty in Neuroscience
Assistant Professor of Obstetrics and Gynaecology
Cross-Appointed to Biomedical and Molecular Sciences

Smith, G.S.
B.A. (Santa Barbara), M.A. (Berkeley), Ph.D. (Santa Barbara)
Emeritus Professor of History

Smith, G.W.
B.A.(Queen's) M.A.(St. Andrews) M.Phil., D.Phil.(Oxon)
Professor of Economics

Smith, M. (Mark)
B.A. (Ottawa), M.A., Ph.D. (Queen's)
Adjunct Faculty in Philosophy

Smith, M. (Mick)
B.Sc.H. (York, England), M. Phil. (North Staffs Polytechnic), M.A. (Thames Polytechnic), Ph.D. (Stirling)
Professor of Environmental Studies

Coordinator of Graduate Studies in Environmental Studies
Professor of Philosophy; Affiliated with Cultural Studies
Queen's National Scholar

Smith, R.W.
B.Sc., Ph.D.(Birmingham)
Professor Emeritus of Materials and Metallurgical Engineering

Smith, S.E.K.
BFA, M.A., Ph.D. (Queen's)
Affiliated with Art History; Affiliated with Cultural Studies

Smith, S.P.
B.Sc., Ph.D. (Western Ontario)
Professor of Biomedical and Molecular Sciences; Cross-Appointed to Chemistry

Smith, T.B.
B.A.(Western Ontario) M.A., M.Phil, Ph.D.(Columbia)
Professor of History

Smithen, P.
B.A.H (Western), M.A.C. (Queen's), Ph.D. (London)
Assistant Professor of Art Conservation
Graduate Coordinator, Art Conservation

Smithrim, K.
B.Mus.(Toronto), B.Ed.(Queen's), Ph.D.(Rochester)
Emeritus Professor of Education

Smol, J.P.
B.Sc.(McGill) M.Sc.(Brock) Ph.D.(Queen's)
Professor of Biology
Cross-Appointed to School of Environmental Studies
Canada Research Chair

Snedden, W.A.
B.Sc.H. (Brock), Ph.D. (Guelph)
Professor of Biology

Snetsinger, R.
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Snider, L.
B.A., M.A., Ph.D.(Toronto)
Professor Emeritus of Sociology

Snieckus, V.
B.Sc.(Alberta), M.Sc.(Berkeley), Ph.D.(Oregon)
Professor Emeritus of Chemistry
Alfred Bader Chair Emeritus in Organic Chemistry

Söderlind, S.
Fil.Mag.(Uppsala), Ph.D.(Toronto)
Professor Emeritus of English Language and Literature

Soederberg, S.
B.A. (Carleton), M.A. (Waterloo), D.Phil (Johann Wolfgang Goethe-University of Frankfurt)
Professor of Global Development Studies
Cross-Appointed to Political Studies; Cross-appointed to Sociology
Canada Research Chair

Sokolsky, J.
B.A.(Toronto) M.A.(Johns Hopkins) Ph.D.(Harvard)
Cross-Appointed to Political Studies
Dean of Arts and Professor, Political Science, Royal Military College of Canada

Somogyi, R.
M.Sc.(Konstanz, Germany), Ph.D.(Bern)
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Spiller, A.
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Spitzmuller, M.
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Spronk, R.
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Srivastava, S.
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Cross-Appointed to Gender Studies
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St. George, S.
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Adjunct Faculty in Environmental Studies

St. Marselle, J.
B.Sc.(Hons.), M.Sc.(Eng.)(Queen's)
Adjunct Assistant Professor of Civil Engineering

Stairs, A.H.
B.Sc.(McGill) M.A.(Goddard College) Ph.D.(Carleton)
Cross-Appointed to Psychology

Stamplecoskie, K.G.
B.Sc.(Waterloo), Ph.D. (Ottawa)
Assistant Professor of Chemistry

Staples, D.S.
B.Sc.(Guelph), M.B.A., Ph.D.(Western Ontario)
Professor, Smith School of Business

Stayer , J.M.
B.A.(Juanita), M.A.(Virginia), Ph.D.(Cornell)
Professor Emeritus of History

Steele, R.
L.R.C.P.(Edin) M.D.(Saskatchewan) D.P.H.(Edin) F.A.P.H.A., F.F.C.M., FRCPC, FRCP(Edin)
Professor Emeritus of Public Health Sciences

Stewart, J.
B.Sc.H.(Queen's), M.S., Ph.D.(Cornell)
Professor of Computing
Coordinator of Graduate Studies in Computing

Stewart, K.
Adjunct Faculty in Environmental Studies

Stockley, D.
H.B.A., B.Ed., M.Ed.(Brock), Ph.D.(Simon Fraser)
Cross-Appointed to Education
Cross-Appointed to School of Rehabilitation Therapy

Stone, J.A.
B.Sc., Ph.D.(London)
Professor Emeritus of Chemistry

Stott, M.J.
B.A., Ph.D.(Sheffield)
Professor Emeritus of Physics, Engineering Physics and Astronomy

Stotz, J.A.H.
B.Sc. (Alberta), Ph.D. (Simon Fraser)
Associate Professor of Physics, Engineering Physics and Astronomy

Straker, S.M.
B.A. (Hons.), M.A. (Toronto), Ph.D. (Cambridge)
Associate Professor of English Language and Literature

Straznicky, M.
B.A.(Concordia) M.A., Ph.D.(Ottawa)
Professor of English Language and Literature
Associate Dean of the School of Graduate Studies

Streich, P.A.
B.Sc. (London), M.Sc. (Wisconsin), Ph.D. (Queen's)
Adjunct Assistant Professor of Geography and Planning

Stroman, P.
Faculty in Neuroscience
Assistant Professor of Medicine

Strong, D.S.
B.Sc. (Queen's) P.Eng.
Cross-Appointed Professor of Mechanical and Materials Engineering

Stuart, H.L.
B.A.(Hons.), M.A.(Western Ontario), Ph.D.(Calgary)
Professor of Public Health Sciences
Cross-appointed to School of Rehabilitation Therapy

Stuart, D.R.
B.A., LL.B.(Natal), Dipl. in Criminology(Cantab), D.Phil(Oxford)
Professor Emeritus of the Faculty of Law

Sullivan, A.M.
B.A. (Memorial), M.A., Ph.D. (Queen's)
Assistant Professor of Philosophy

Sullivan, P.
B.A. (York), M.A.(Queen's)
Adjunct Professor; Affiliated with Cultural Studies;
Public Programs Manager, Agnes Etherington Art Centre

Sun, A.
B.A., M.A. (Dongbei), M.A. (McMaster), Ph.D. (Toronto)
Associate Professor of Economics

Suo, W.
B.Sc., M.Sc.(Hebei), Ph.D.(British Columbia)
Associate Professor,Smith School of Business; Cross-Appointed to Economics

Surgenor, B.W.
B.Sc.(Queen's), M.Eng.(McMaster), Ph.D.(Queen's)
Professor of Mechanical and Materials Engineering

Surridge, M.E.
M.A., D.Phil.(Oxon)
Professor Emeritus of French Studies

Sypnowich, C.A.
B.A., M.A.(Toronto), D.Phil.(Oxon)
Professor of Philosophy
Coordinator of Graduate Studies in Philosophy
Queen's National Scholar

Sytsman, V.A.
B.A., Soc.Sc., Master of Criminology (Ottawa), M.A., Ph.D. (Rutgers)
Associate Professor of Sociology

Szarek, W.A.
B.Sc., M.Sc.(McMaster), Ph.D.(Queen's)
Professor Emeritus of Chemistry

Szewczuk, M.R.
B.Sc., M.Sc.(Guelph), Ph.D.(Windsor)
Professor of Biomedical and Molecular Sciences
Professor of Medicine

Szto, C.
B.H.K. (British Columbia), M.Sc. (Toronto), Ph.D. (Simon Fraser)
Assistant Professor in Kinesiology and Health Studies

T

Tai, H.H.
B.Sc., M.Sc. (Toronto), Ph.D. (Ottawa)
Adjunct Assistant Professor of Biology

Takahara, G.K.
B.A.(British Columbia), M.S., Ph.D.(Carnegie Mellon)
Associate Professor of Mathematics and Statistics
Associate Professor of Statistics
on leave July 2018-June 2019

Take, W. A.
B.Sc., M.Sc. (New Brunswick), Ph.D. (Cambridge)
Associate Professor of Civil Engineering

Tam, S-P.
B.Sc.(McGill), Ph.D.(Dalhousie)
Adjunct Assistant Professor of Pathology and Molecular Medicine

Tardif, C.
B.Sc., M.Sc., Ph.D. (Montreal)
Cross-Appointed to Mathematics and Statistics
Associate Professor of Mathematics and Computing Science, RMC

Tayade, C.
DVM (Nagpur Veterinary College), Ph.D. (Indian Veterinary Research Institute)
Professor of Biomedical and Molecular Sciences
Cross-Appointed to Pathology and Molecular Medicine

Taylor, S.J.
B.A.,M.A.,Ph.D.(Queen's)
Associate Professor of Medicine

Taylor, M.E.
B.A. (Warwick), M.Phil. (Cambridge), Ph.D. (Warwick)
Coordinator of Graduate Studies, Global Development Studies
Associate Professor of Global Development Studies
Cross-Appointed to Sociology
Cross-Appointed to Environmental Studies

Taylor, A.J.
B.Sc.(R.M.C.) M.B.A.(Queen's) Ph.D.(Stanford)
Professor Emeritus, Smith School of Business

Taylor, D.R.
B.Sc.(Queen's) M.A.(Toronto) D.Phil.(Oxon)
Professor Emeritus of Physics, Engineering Physics and Astronomy

Taylor, P.D.
B.Sc., M.Sc.(Queen's), Ph.D.(Harvard)
Professor of Mathematics and Statistics
Cross-Appointed to Biology
Cross-Appointed to Education

Ten Hove, M.
M.D., M.Eng., FRCS(C) (Queen's University)
Faculty in Neuroscience
Associate Professor of Medicine

Tennent, R.D.
B.A.Sc., M.Sc., Ph.D.(Toronto)
Professor Emeritus of Computing

Thiele, V.
Diplom-Kaufmann, Ph.D. (Humboldt University)
Associate Professor, Smith School of Business

Thomas, J.
B.A. (Hons.), M.A., J.D.(Toronto), LL.M., Ph.D. (New York)
Assistant Professor of Law

Thomas, T.
B.Com. (Hons.), M.Sc. (Queen's), Ph.D.(Arizona)
Assistant Professor, Smith School of Business

Thompson, M.
B.A. (Hons.)(Lakehead), M.Sc.(Guelph), Ph.D.(Western Ontario)
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Thompson, P.E.
B.A.,M.A.(Carleton), A.M., Ph.D.(Penn State)
Affiliated with Cultural Studies

Thompson, W.T.
B.A.Sc., M.A.Sc., Ph.D. (Toronto)
Cross-Appointed to Chemical Engineering
Royal Military College

Thomson, D.J.
B.Sc. (Acadia), M.Sc., Ph.D. (Polytechnic Inst. of Brooklyn),P.Stat., P.Eng., C.Stat., FRSC
Professor Emeritus of Mathematics and Statistics
Professor Emeritus of Statistics

Thomson, L.I.
B.Sc., M.Sc.(Western), Ph.D.(Ottawa)
Assistant Professor of Geography and Planning

Thornton, D.B.
B.Sc.(Hons.), M.B.A.(Western Ontario), Ph.D.(York), FCA(Ontario)
Professor, Smith School of Business

Thurlby, M.
Ph.D. (East Anglia)
Adjunct Professor of Art History

Tienhaara, K. (start date: September 2018)
B.Sc. (British Columbia), M.E.S. (Nottingham), Ph.D. (Amsterdam)
Assistant Professor of Environmental Studies
Assistant Professor of Global Development Studies

Timmons, K.
B.A. (Ryerson), M.A., Ph.D. (Toronto)
Assistant Professor of Education

Tinline, R.R.
B.A.(Queen's) Ph.D.(Bristol)
Professor Emeritus of Geography and Planning

Toffelmire, E.B.
B.Sc., M.Sc.(Queen's), M.D., C.M.(McGill)

Professor of Medicine
Cross-Appointed to Pharmacology and Toxicology

Tolmie, J.
B.A., M.A. (Yale), A.M., Ph.D. (Harvard), D. Phil. (Oxford)
Associate Professor of Gender Studies
Affiliated with Cultural Studies
Cross-Appointed to English Language and Literature

Tomasone, J.R.
B.Sc., B.P.H.E. (Queen's), Ph.D. (McMaster)
Assistant Professor of Kinesiology and Health Studies

Topaloglu, S.
B.S. (Bilikent, Turkey), M.A. (Wharton), Ph.D.(Arizona State)
Associate Professor, Smith School of Business

Tough, M.W.
B.A., B.P.H.E., B.Sc.P.T., M.Sc. (Queen's)
Assistant Professor of Rehabilitation Therapy

Towheed, T.
B.A., M.D.(Queen's) FRCPC
Cross-Appointed to Public Health Sciences
Associate Professor of Medicine

Tranmer, J.
B.Sc.N., M.Sc. (Queen's), Ph.D.(Toronto)
Professor of Nursing
Cross-Appointed to Public Health Sciences

Tregunno, D.
B.Sc.(Toronto), M.H.S.A.(Alberta), Ph.D. (Toronto)
Associate Professor of Nursing; Associate Professor of Health Quality

Treitz, P.
B.Sc. (Brock), M.A., Ph.D. (Waterloo)
Professor of Geography and Planning

Tripp, D.A.
B.A., M.A. (St. Mary's), Ph.D.(Dalhousie)
Associate Professor of Psychology

Troje, N.
M.A., Ph.D. (Freiburg, Germany)
Professor of Psychology
Faculty in Neuroscience
Cross-Appointed to Computing
Cross-Appointed to Biology

Tron, V.
MD (Alberta)
Professor of Pathology and Molecular Medicine
Head of Pathology and Molecular Medicine

Trothen, T.J.
B.A., M.Div. (Queen's), Th.D. (Toronto)
Associate Professor of Religious Studies
Associate Professor, School of Rehabilitation Therapy

Tschakovsky, M.E.
B.Sc., M.Sc., Ph.D.(Waterloo)
Associate Professor of Kinesiology and Health Studies
Cross-Appointed to Biomedical and Molecular Sciences

Tse, M.Y.
B.Sc., M.Sc., Ph.D. (Queen’s)
Adjunct Assistant Professor of Biomedical and Molecular Sciences

Tsuruda, S.J.
B.A., M.A. (Stanford), J.D.,Ph.D. (UCLA)
Assistant Professor of Law

Tu, D.
B.Sc.(Univ. of Sc. & Tech;. China), Ph.D. (Med. Univ. South Carolina)
Professor of Public Health Sciences
Cross-Appointed to Mathematics and Statistics
Cross-Appointed to Statistics

Tufts, B.L.
B.Sc.(Hons.), M.Sc. (Acadia), Ph.D.(British Columbia)
Professor of Biology

Turcke, D.
B.Eng. (Carleton), M.A.Sc., Ph.D.(Waterloo)
Professor Emeritus of Civil Engineering

Turner, K.
B.Sc. (Toronto), MD (McMaster), M.Sc. (Queen's)
Cross-Appointed to Public Health Sciences

U

Uffen, R.J.
O.C.,B.A.Sc.,M.A. (Toronto) Ph.D. (Western Ontario) D.Sc. (Queen's, Western, R.M.C., McMaster) F.R.S.C.,F.G.S.A.,F.A.A.A.S.,P.Eng.
Professor Emeritus of Geological Sciences and Geological Engineering

Ungi, T.
B.
Adjunct Assistant Professor of Computing

Upitis, R.B.
B.A., LL.B., M.Ed.(Queen's), Ed.D.(Harvard)
Professor of Education
Cross-Appointed to Psychology

Usher, D.
B.A.(McGill) M.A.(Oxon) Ph.D.(Chicago) F.R.S.C.
Professor Emeritus of Economics

V

Valsangkar-Smyth, M.
C.
Adjunct Assistant Professor of Psychology

van Anders, G.
B.Sc. (Western), Ph.D. (British Columbia)
Assistant Professor of Physics, Engineering Physics & Astronomy

Vancoeverdendegroot, P.J.
M.Sc. (Toronto), Ph.D.(Queen's)
Adjunct Assistant Professor of Biology

Van Dalen, K.
P.Eng., B.Sc.(Queen's) M.Sc.(London)Ph.D.(Cantab) D.I.C.
Professor Emeritus of Civil Engineering

Van Die , M.
B.A.(Toronto), M.A., Ph.D.(Western Ontario)
Emeritus Professor of History
Professor of Theology

van Deusen, N.
B.A. (Kent State), M.A. (Ohio State), MLIS (Texas), Ph.D. (Illinois)
Professor of History

Van Vugt, D.A.
B.S.(Calvin), Ph.D.(Michigan)
Professor of Obstetrics and Gynecology
Cross-Appointed to Physiology
Faculty in Neuroscience

VanDenKerkhof, E.
R.N.(St.Lawrence), B.Sc.N.(Ottawa), M.Sc.(Queen's), D.P.H.(John Hopkins)
Professor of Nursing; Cross-Appointed to Anesthesiology

vanLoon, G.W.
B.Sc.(McMaster), Ph.D.(Toronto)
Professor Emeritus of Chemistry
Adjunct Faculty in Environmental Studies

Vanner, S.J.
B.Sc.(Hons), M.Sc., M.D.(Queen's), FRCPC
Professor of Medicine
Professor of Translational Medicine
Cross-Appointed to Biology
Cross-Appointed to Biomedical and Molecular Sciences

Varadharajan, A.
B.A.(Hons.)(Delhi), M.A., Ph.D.(Saskatchewan)
Associate Professor of English Language and Literature; Affiliated with Cultural Studies

Varty, J.
B.A. (Queen's), M.A. (Calgary), Ph.D. (Queen's)
Adjunct Assistant Professor of Environmental Studies

Vasanthakumar, A
A.B. (Harvard), M.A. (Toronto), M.Sc. (Oxford), J.D. (Yale), D.Phil. (Oxford)
Assistant Professor of Law

Queen's National Scholar in Legal and Political Philosophy

Velez, M.
M.Sc, MD. (Universidad Pontificia Bolivariana, Colombia),Ph.D.(Université de Montréal)
Cross-appointed to Public Health Sciences

Vernet, M.
L.ès L.(Paris) D.E.S.(Lyon) Agrégé des Lettres Modernes (Paris)
Professor Emeritus of French Studies

Vertegaal, R.P.H.
B.A.(Utrecht) M.Sc.(Bradford) Ph.D.(Twente)
Professor in Computing
Faculty in Neuroscience

Viero, M-L.
B.Sc. (Copenhagen), M.A., Ph.D. (Cornell)
Associate Professor in Economics

Vincent, A.
B.A. Laval), M.Sc., PhD (McGill)
Assistant Professor of Physics, Engineering Physics & Astronomy

Vis, C.
B.Sc.H.(Dalhousie), M.Sc., Ph.D. (Montreal)
Adjunct Assistant Professor of Biology

Viswanathan, L.
B.A. (McGill), M.E.S., Ph.D. (York), M.C.I.P., R.P.P.
Associate Professor of Geography and Planning
Director of the School of Urban and Regional Planning
Cross-Appointed to Environmental Studies

Vlachopoulos, N.
B.A.Sc., M.A.Sc.(Royal Military College), Ph.D.(Queen's), P.Eng., CD, CME
Cross-Appointed to Geological Sciences and Geological Engineering ; Cross-Appointed to Environmental Studies

von Hlatky, S.
B.A. (McGill), Ph.D. (Montreal)
Associate Professor of Political Studies
Academic Leave July 1, 2018- June 30, 2019

Vorano, N.
B.F.A., B.A. (York), M.A., Ph.D. (Rochester).
Associate Professor of Art History
Affiliate with Cultural Studies

W

Wade, G.A.
B.Sc. (Toronto), M.Sc., Ph.D. (Western Ontario)
Cross Appointed to Physics, Engineering Physics and Astronomy
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Wade-Woolley, L.
B.A.(Tennessee), M.A.(McGill), Ph.D.(Toronto)

Professor of Education
Cross-Appointed to Psychology

Walia, J.
MD (Guru Nanak Dev University School of Medicine)
Assistant Professor of Pediatrics
Cross-Appointed to Biomedical and Molecular Sciences

Walker, B.
B.A. (York), M.A., Ph.D. (Toronto)
Associate Professor of History
Affiliated with Cultural Studies
Cross-Appointed to Gender Studies

Walker, C.
B.A., M.A., Ph.D.(Toronto)
Professor of Drama
Cross-Appointed to English Language and Literature
Affiliated with Cultural Studies

Walker, D.M.C.
MD(Queen's),FRCPC
Professor of Emergency Medicine
Professor of Family Medicine
Cross-Appointed to Policy Studies
Executive Director and Stauffer-Dunning Chair, Policy Studies

Walker, M.
Mus. Bac., M.A., Ph.D. (Toronto), A.R.C.T. (Piano)
Associate Professor and Director, Dan School of Music; affiliated with Cultural Studies

Walker, R.M.
B.Sc.,M.Sc.,Ph.D.(Queen's)
Adjunct Professor of Biomedical and Molecular Sciences

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Affiliated with Cultural Studies

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Wang, L.
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Wang, P.
B.Sc., Ph.D. (McMaster)
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Wang, R.
B.Sc.(Fudan) M.A.,Ph.D.(Boston)
Sir John A. Macdonald Professor of Economics
Professor of Economics

Wang, S.
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Y

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Stephen Sigurdson Professor in Corporate Law and Finance

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Cross-Appointed to Medicine
Cross-Appointed to Biomedical and Molecular Sciences
Adjunct Professor of Public Health Sciences
Adjunct Professor of Health Quality

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ACADEMIC INTEGRITY POLICY

1. GENERAL

(In addition to the sources named in this section, the School of Graduate Studies gratefully acknowledges the authors of the current regulation, Academic Integrity, of the Faculty of Arts and Science, Queen's University.)

Academic integrity is constituted by the five core fundamental values of honesty, trust, fairness, respect and responsibility (as articulated by the International Center for Academic Integrity, Clemson University) (ICAI), all of which are central to the building, nurturing and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University (see Report on Principles and Priorities). Queen's students, faculty, administrators and staff therefore all have ethical responsibilities for supporting and upholding the fundamental values of academic integrity.

For the background to the development of this policy statement and a list of recommendations for future action, please see also Sub-Committee on Academic Integrity -Report to the Senate Committee on Academic Development (SCAD).

Additional information can be found at the Academic Integrity @ Queen's website.

2. DEFINITIONS

In The Fundamental Values of Academic Integrity the ICAI offers the following statements contextualizing these values:

i. **Honesty**: An academic community of integrity advances the quest for truth and knowledge by requiring intellectual and personal honesty in learning, teaching, research, and service.
ii. **Trust**: An academic community of integrity fosters a climate of mutual trust, encourages the free exchange of ideas, and enables all to reach their highest potential.
iii. **Fairness**: An academic community of integrity establishes clear standards, practices, and procedures and expects fairness in the interactions of students, faculty, and administrators.

iv. **Respect**: An academic community of integrity recognizes the participatory nature of the learning process and honours and respects a wide range of opinions and ideas.
v. **Responsibility**: An academic community of integrity upholds personal accountability and depends upon action in the face of wrongdoing.

Faculty, students and staff are encouraged to consult the ICAI's document The Fundamental Values of Academic Integrity for a more detailed discussion.

3. INTEGRITY IN ACTION

Within a graduate program, it is essential that an environment exists in which faculty and students have the utmost regard for the principles of academic integrity. Honesty and mutual trust constitute the very basis of all scientific and scholarly exchange. It is the responsibility of the entire University community to contribute to creating a community based on the principles of academic integrity.

As emphasized in Queen's University's Senate Policy on Integrity in Research (Approved by the Senate January 29, 2009, revised February 24, 2015),

"The responsibilities of the University include promoting integrity in research and scholarship, investigating allegations of misconduct, imposing appropriate sanctions if misconduct has occurred and reporting cases of misconduct appropriately" (p.1).

Graduate students must:

- pursue their research activities in a manner that is consistent with the highest standards of ethical and scientific practice;
- adhere to Queen's University's ethics boards, the General Research Ethics Board (GREB) and the Health Sciences Research Ethics Board
- carry out research in honest search for knowledge, base findings upon a critical appraisal and interpretation according to scientific, scholarly and/or creative principles appropriate to the particular discipline.

The research conducted for the Master's essay, Master's thesis or Doctoral dissertation, and the resulting document, comprises the most significant part of the graduate research degree requirements, so that research and the resulting document must meet the highest standards of research and academic integrity. Consequently, graduate programs and the School of Graduate Studies will have jurisdiction to make decisions

about and deliver sanctions for, these separate kinds of departures from academic integrity:

a. in the case of graduate level courses, or a required course taken by a graduate student;
b. in the case of non-coursework graduate degree requirements, such as the comprehensive examination (or equivalent)
c. in the case of research carried out for the essay, thesis or dissertation, and/or the final document itself;

and shall assign sanctions accordingly (see Section 5 below).

NOTES

1. For assistance in dealing with academic integrity issues, graduate students should be encouraged to contact the Society of Graduate and Professional Students' Student Advisors. The Student Advisors offer advice and advocacy services to graduate and professional students at Queen's University.
2. It is assumed that since graduate students have gone through several years of post-secondary education prior to their graduate level studies, they will have familiarity with the general principles and expectations of academic integrity in coursework, non-coursework requirements, and research in their discipline, Department, Program and/or School. It is also assumed that graduate students will therefore understand the importance of these principles, and will be aware of consequences of departures from these principles.
3. Balls "Master's Essay" refers to the major, terminal research component of any Master's degree, currently represented by the course number 898; "Master's Thesis" refers to the substantive, terminal research document of any research Master's degree, currently represented by the course number 899; "Doctoral Dissertation" refers to the substantive, terminal research document of all Doctoral degrees, currently represented by the course number 999.

4. OFFENCES

The following list defines the domain of relevant acts which could be considered to be departures from academic integrity without providing an exhaustive list.

Plagiarism: Presenting another's ideas or phrasings as one's own without proper acknowledgment. Examples: copying and pasting from the internet, a printed source, or other resource without proper acknowledgment; copying from another student; using

direct quotations or large sections of paraphrased material in an assignment without appropriate acknowledgment; submitting the same piece of work in more than one course without the permission of the instructor(s); copying a laboratory or field report; using another researcher's data without proper acknowledgement, using another researcher's data unless specifically allowed by the instructor and the author; using direct quotations or large sections of paraphrased material in a laboratory or field report, research report, thesis, or scholarly publication without appropriate acknowledgment; submission for publication of articles published elsewhere excepted where clearly indicated to be a republication.

Use of unauthorized materials: Examples: possessing or using unauthorized study materials or aids during a test; copying from another's test paper; using an unauthorized calculator or other aids during a test; unauthorized removal of materials from the library, or deliberate concealment of library materials; using another researcher's data unless specifically permitted; using unpublished material of others without permission; use of archival materials in violations of the rules of the archival source; failure to obtain permission of the author before using information gained through access to manuscripts or grant applications during a peer- review process.

Facilitation: Deliberately enabling another's breach of academic integrity. Examples: knowingly allowing one's essay, assignment, laboratory or field report, to be copied by someone else for the purpose of plagiarism; buying or selling of term papers or assignments and submitting them as one's own for the purpose of plagiarism.

Forgery: Submitting counterfeit documents or statements. Examples: creating a transcript or other official document; fabricating laboratory or research data or source material; altering transcripts or other official documents relating to student records; misrepresenting one's credentials; creating or altering letters of reference; creating a medical note.

Falsification: Misrepresentation of one's self, one's work or one's relation to the University. Examples: omission of information; altering transcripts or other official documents relating to student records; impersonating someone in an examination or test; submitting a take-home examination written, in whole or in part, by someone else; falsifying laboratory or research data or source material; allowing someone else to do the laboratory or field work without the knowledge and approval of the instructor; omitting, fabricating or falsifying laboratory or research data; failure to appropriately recognize contributions of others; attribution of authorship to persons other than those who have contributed sufficiently to take responsibility for intellectual content.

As it is not possible to list every possible relevant act, instructors and graduate departments and programs should ensure that their students are aware of any specific or special standards of research and academic integrity of their graduate courses and programs. Students are encouraged to consult instructors and researchers in specialized fields such as music, fine arts and computing regarding procedures and use of materials in these fields.

5. REMEDIES OR SANCTIONS FOR DEPARTURES FROM ACADEMIC INTEGRITY

According to the Senate Policy on Academic Integrity Procedures- Requirements of Faculties and Schools, these are the factors to consider when assigning a sanction when it has been determined that a departure from academic integrity has occurred:

- Evidence of a deliberate attempt to gain advantage;
- The seriousness of the departure having regard to its actual or potential consequences;
- The extent to which the work or conduct in question forms a significant portion of the degree requirements and whether the extent of the departure is substantial as demonstrated by the work or conduct in question;
- Injury to another student or to the institution;
- Multiple departures within a single incident or multiple departures over time, rather than an isolated aberration;
- Whether the departure has been committed by a student who ought to be familiar with the expectations for academic integrity in the discipline, Department, Program, School and/or Faculty;
- Conduct that intimidates others or provokes the misconduct of others.

Also to be considered are the student's previous history, and mitigating circumstances.

Student's previous history: A record of a previous departure from academic integrity may be relevant when assessing an appropriate sanction or remedy. After making a finding, the faculty member(s) responsible must then contact the School of Graduate Studies. If a previous finding is on record, the faculty member(s) responsible will refer the case to the Associate Dean of the School of Graduate Studies who will set an appropriate sanction.

The Associate Dean of the School of Graduate Studies will inform the Department Head and/or Graduate Program Coordinator that they have been notified of a possible case of

a departure from academic integrity from a student with a previous finding on record, and that the School of Graduate Studies shall assume responsibility for the case and sanctions, if any. The department can make a recommendation to the Associate Dean of the School of Graduate Studies for a sanction, even in the case of a previous finding. However, to avoid misunderstanding, all communication regarding the review of the case and the resulting sanction if any, to the student shall come from the Associate Dean of the School of Graduate Studies.

If there is no previous finding on record, the faculty member(s) responsible will determine a remedy or sanction appropriate to the extent or severity of the offence, and may consult with the Department Head, Graduate Chair or Program Director for guidance on an appropriate remedy or sanction.

Mitigating circumstances: Mitigating circumstances do not exonerate or excuse from the finding of a departure from academic integrity, but these factors may be taken into account to ensure that the imposed sanction is fair, reasonable and proportionate to the gravity of the departure found. The decision must outline the evidence supporting reliance on the mitigating circumstances. The onus is on the student to adduce evidence of mitigating circumstances, which may include:

Documented evidence from an appropriate health professional of factors directly compromising the student's capacity to adhere to the standards of academic integrity at the relevant time;
Prompt admission to the departure from academic integrity by the student and expression of contrition and willingness to undertake educative remedies;
Evidence that reasonable steps were not taken in the circumstances to bring the standards and expectations regarding academic integrity to the attention of the student at the relevant time.

In summary, any sanction should reflect the extent and severity of the departure from academic integrity including those related to courses, non-coursework degree requirements, and research carried out for the essay, thesis or dissertation, and precedents in the graduate department or program, academic unit and School of Graduate Studies, taking into account any mitigating circumstances.

a. Course work

The following are the admissible sanctions that may be applied, in any number and/or combination as deemed necessary, for departures from academic integrity within a graduate course, or a required course taken by a graduate student:

- Issuing an oral or written warning.
- Completion of an educational program/workshop (if available).
- Requiring submission of a revised or new piece of work.
- Assigning a partial or total loss of marks on the piece of work.
- Assigning partial or total loss of grades in the course.
- Recommending withdrawal from the graduate program for a specified period of time.
- Recommending withdrawal from the university for a specified minimum period of time.
- Recommending withdrawal from the university for the maximum allowable period of time.
- Recommending the rescinding of a degree.

If the sanction leads to assigning a failed grade in the course, the student may not drop the course, regardless of the deadlines to drop a course.
Instructors of graduate courses may impose Sanctions 1 through 5, without referring the matter to the School of Graduate Studies (apart from checking re. previous findings). All findings and sanctions must be reported to the School of Graduate Studies.

If the instructor believes a more serious penalty is warranted, or there is a previous finding, he or she must refer the matter, including their finding, for sanctioning to the Associate Dean of the School of Graduate Studies. All documents previously used to investigate the case will be forwarded to the Associate Dean of the School of Graduate Studies. The student must be notified in writing of the finding and the referral to the Associate Dean of the School of Graduate Studies for sanctioning.

For departures from academic integrity within a graduate course, or a required course taken by a graduate student, the Associate Dean of the School of Graduate Studies may impose Sanctions 1 through 5 above. The Associate Dean of the School of Graduate Studies may also recommend Sanctions 6, 7, 8, or 9 to the Senate Committee on Academic Procedures (SCAP).

b. Non-coursework graduate degree requirements, such as the comprehensive examination (or equivalent)

The faculty member(s) responsible for administering the comprehensive examination (or equivalent) or any other non- coursework degree requirement may assign sanctions 1 through 4 above in any number and/or combination as deemed necessary, for departures from academic integrity in the comprehensive examination (or equivalent)

process, or in any other non-coursework graduate degree requirement. All findings and sanctions must be reported to the School of Graduate Studies.

Alternatively, the faculty member(s) responsible for administering the comprehensive examination (or equivalent) or other non- coursework degree requirement may recommend to the Department Head, Graduate Chair or Program Director, the assigning of a grade of “Fail” for the requirement. This decision would most likely be used in the case of departure from academic integrity in the comprehensive examination (or equivalent). The Department Head, Graduate Chair or Program Director shall receive and review all documents previously used to investigate the case. The student must be notified in writing of the review by the Head, Graduate Chair or Program Director and the outcome and the finding and sanction reported to the School of Graduate Studies.

If the Head, Graduate Chair or Program Director supports the assigning a grade of “Fail” for the requirement, he or she shall recommend to the School of Graduate Studies that the student be required to withdraw because of a grade of “Fail” for the requirement based on a departure from academic integrity.

If the faculty member(s) responsible for administering the comprehensive examination (or equivalent) or other non- coursework degree requirement believes a more serious penalty is warranted, or if there is a previous finding, or if the Department Head, Graduate Chair or Program Director recommends to the School of Graduate Studies that the student be required to withdraw because of a grade of “Fail” for the requirement based on a departure from academic integrity, the matter, including the finding, must come forward for sanctioning to the Associate Dean of the School of Graduate Studies. All documents previously used to investigate the case will be forwarded to the Associate Dean of the School of Graduate Studies. The student must be notified in writing of the finding and the referral to the Associate Dean of the School of Graduate Studies for sanctioning.

For departures from academic integrity in the comprehensive examination (or equivalent) process, or in any other non-coursework graduate degree requirement, the Associate Dean of the School of Graduate Studies may impose Sanctions 1 through 4 above, as available to faculty member(s).The Associate Dean of the School of Graduate Studies may also recommend Sanctions 6,7, 8, or 9 to SCAP.

c. Master's Essay, Master's Thesis, Doctoral Dissertation
Sanctions 8 and 9,

8. Recommending withdrawal from the university for the maximum allowable period of time;

9. Recommending the rescinding of a degree;

are the sanctions that may be applied for departures from academic and/or research integrity for the research conducted for the essay, thesis or dissertation, and/or the essay, thesis or dissertation document itself. After a duly conducted investigation of departure from academic or research integrity (see Section 6 b below) the Associate Dean of the School of Graduate Studies may recommend Sanctions 8 or 9 to SCAP.

6. INVESTIGATION OF DEPARTURES FROM ACADEMIC INTEGRITY

a. Course work
Where possible departures from academic integrity within a course are identified, the instructor must advise the student in writing of the following:

- the evidence on which the investigation is based;
- the possible remedies or sanctions;
- the student's right to respond to the investigation; and
- the student's right to have representation for any response; the instructor will inform the student of the services provided by the Office of the University Ombudsman.

After notifying the student in writing of the possible departure, the instructor will conduct a thorough investigation of the available evidence. This investigation may consider written submissions and/or oral evidence from witnesses, if available, pertaining to the possible departure from academic integrity, and the student's response, which may be provided in writing and/or in-person.

Within 10 working days of receiving the notice of investigation, an initial meeting should be held between the instructor and student, arranged by the instructor. If the student does not wish to meet with the instructor the student can submit a written response to the allegation to the instructor instead. If the student does not respond to an invitation for a meeting, or does not make a written submission, the process will continue without the student's input. If a meeting is arranged, both the student and the instructor have the right to be accompanied by one person for support and/or advice, although the meeting is intended to be exploratory and not a legal proceeding. If the

student intends to be accompanied by legal counsel, he/she must provide at least 48 hours notice to the instructor, who reserves the right to reschedule the meeting if notice is not given.

The instructor and student should discuss the allegation and, if possible, come to a mutually acceptable agreement regarding its outcome. At least 10 working days prior to the meeting or providing a written response, the student must be informed of new material, if any, that the instructor has obtained since issuing the notice of investigation.

A University Dispute Resolution Advisor may, as of right, also be present at any meeting between the student and any decision-maker.

A student may not withdraw from the course while the investigation is under way.

While investigating cases of possible departure from academic integrity, the instructor is encouraged to seek guidance from the Graduate Chair, Head of Department or Program Director on matters of policy relating to academic integrity within the Department or Program.

In a departure from academic integrity where the instructor is unavailable, it will be the responsibility of the Department Head/Program Director to delegate the matter to an appropriate member of the academic unit within which the departure has occurred. If it is not possible to delegate the case appropriately, the Associate Dean of the School of Graduate Studies will assume the responsibility for proceeding with the case. Any investigation, finding or sanction will be pursued according to the procedures outlined above.

b. Non-coursework graduate degree requirements, such as the comprehensive examination (or equivalent)

Where possible departures from academic integrity in the comprehensive examination (or equivalent) or any other non- coursework degree requirement are identified, the faculty member(s) responsible for administering the comprehensive examination (or equivalent) or other non- coursework degree requirement) must advise the student in writing of the following:

- the evidence on which the investigation is based;
- the possible remedies or sanctions; the student's right to respond to the investigation; and

- the student's right to have representation for any response; the instructor will inform the student of the services provided by the Office of the University Ombudsman.

After notifying the student in writing of the possible departure, the faculty member(s) will conduct a thorough investigation of the available evidence. This investigation may consider written submissions and/or oral evidence from witnesses, if available, pertaining to the possible departure from academic integrity, and the student's response, which may be provided in writing and/or in-person.

Within 10 working days of receiving the notice of investigation, an initial meeting should be held between the faculty member(s) and student, arranged by the faculty member(s). If the student does not wish to meet with the faculty member(s) the student can submit a written response to the allegation instead. If the student does not respond to an invitation for a meeting, or does not make a written submission, the process will continue without the student's input. If a meeting is arranged, both the student and the faculty member(s) have the right to be accompanied by one person for support and/or advice, although the meeting is intended to be exploratory and not a legal proceeding. If the student intends to be accompanied by legal counsel, he/she must provide at least 48 hours notice to the instructor, who reserves the right to reschedule the meeting if notice is not given.

The faculty member(s) and student should discuss the allegation and, if possible, come to a mutually acceptable agreement regarding its outcome. At least 10 working days prior to the meeting or providing a written response, the student must be informed of new material, if any, that the faculty member(s) has obtained since issuing the notice of investigation.

A University Dispute Resolution Advisor may, as of right, also be present at any meeting between the student and any decision-maker.

A student may not withdraw from the graduate degree program while the investigation is under way.

While investigating cases of possible departure from academic integrity, the faculty member(s) is/are encouraged to seek guidance from the Graduate Chair, Head of Department or Program Director on matters of policy relating to academic integrity within the Department or Program.

In a departure from academic integrity where the faculty member(s) responsible for administering the comprehensive examination (or equivalent) or other non- coursework degree requirement is unavailable, it will be the responsibility of the Department Head/Program Director to delegate the matter to an appropriate member of the academic unit within which the departure has occurred. If it is not possible to delegate the case appropriately, the Associate Dean of the School of Graduate Studies will assume the responsibility for proceeding with the case. Any investigation, finding or sanction will be pursued according to the procedures outlined above.

c. Master's Essay, Master's Thesis, and Doctoral Dissertation

Where possible departures from academic and/or research integrity for the research conducted for the essay, thesis or dissertation, and/or in the essay, thesis or dissertation document itself, are identified, the Associate Dean of the School of Graduate Studies shall be contacted immediately. The person(s) raising the issue(s) shall outline the particular concerns and the Associate Dean of the School of Graduate Studies shall assume the responsibility for proceeding with the case.

The Associate Dean of the School of Graduate Studies shall contact the student's primary supervisor immediately. The supervisor shall be responsible for an initial review of the data, document and/or sections of the document in question, to determine if sufficient evidence exists to warrant an investigation.

In the case of an investigation the Associate Dean of the School of Graduate Studies must advise the student in writing of the following:

- the evidence on which the investigation is based;
- the student's right to respond to the investigation; and
- the student's right to have representation for any response; the Associate Dean of the School of Graduate Studies will inform the student of the services provided by the Office of the University Ombudsman.

After notifying the student in writing of the possible departure, the Associate Dean of the School of Graduate Studies will conduct a thorough investigation of the available evidence. This investigation may consider written submissions and/or oral evidence from witnesses, if available, pertaining to the possible departure from academic or research integrity, and the student's response, which may be provided in writing and/or in-person.

Within 10 working days of receiving the notice of investigation, an initial meeting should be held between the Associate Dean of the School of Graduate Studies and student, arranged by the School of Graduate Studies. If the student does not wish to meet the student can submit a written response to the allegation to the Associate Dean of the School of Graduate Studies. If the student does not respond to an invitation for a meeting, or does not make a written submission, the process will continue without the student's input. If a meeting is arranged, both the student and the Associate Dean of the School of Graduate Studies have the right to be accompanied by one person for support and/or advice, although the meeting is intended to be exploratory and not a legal proceeding. If the student intends to be accompanied by legal counsel, he/she must provide at least 48 hours notice to the Associate Dean, who reserves the right to reschedule the meeting if notice is not given.

The Associate Dean of the School of Graduate Studies and student should discuss the allegation and, if possible, come to a mutually acceptable agreement regarding its outcome. At least 10 working days prior to the meeting or providing a written response, the student must be informed of new material, if any, that the Associate Dean of the School of Graduate Studies has obtained since issuing the notice of investigation.

A student may not withdraw from the graduate degree program while the investigation is under way.

A University Dispute Resolution Advisor may, as of right, also be present at any meeting between the student and any decision-maker.

While investigating cases of possible departure from academic integrity, the Associate Dean of the School of Graduate Studies should seek guidance from the Graduate Chair, Head of Department or Program Director on matters of policy relating to academic integrity within the Department/Program.

7. FINDING OF DEPARTURE FROM ACADEMIC INTEGRITY

a. Course work

If, after an investigation of the evidence and consideration of the response by the student, the instructor determines that there are no grounds for a finding, all documents related to the case will be destroyed and the student will be informed that the investigation has been dropped.

If, after an investigation of the evidence and consideration of the response by the student, the instructor determines that there is sufficient and persuasive evidence on which to make a finding of departure from academic integrity, the instructor must set an appropriate remedy or sanction and then notify the student in writing.

Factors that should be considered in assigning a remedy or sanction are as outlined in Section 5 above.

The instructor may consider a range of remedies or sanctions as outlined in Section 5a. above.

If the remedy or sanction or remedies or sanctions result in a failure of the course, the student may not drop the course, regardless of the drop deadlines.

If the instructor believes that the finding warrants a sanction more serious than an instructor may impose, the instructor will refer the case to the Associate Dean of the School of Graduate Studies. All documents previously used to investigate the case will be forwarded to the Associate Dean of the School of Graduate Studies. The student must be notified in writing by the instructor that the case has been referred to the Associate Dean of the School of Graduate Studies.

b. Non-coursework graduate degree requirements, such as the comprehensive examination (or equivalent)

If, after an investigation of the evidence and consideration of the response by the student, the faculty member(s) responsible for administering the comprehensive examination (or equivalent) or other non- coursework degree requirement determines that there are no grounds for a finding, all documents related to the case will be destroyed and the student will be informed that the investigation has been dropped.

If, after an investigation of the evidence and consideration of the response by the student, the faculty member responsible for administering the comprehensive examination (or equivalent) or other non- coursework degree requirement determines that there is sufficient and persuasive evidence on which to make a finding of departure from academic integrity, the faculty member(s) must set an appropriate remedy or sanction and then notify the student in writing.

Factors that should be considered in assigning a remedy or sanction are as outlined in Section 5 above.

The faculty member(s) responsible for the administering the comprehensive examination (or equivalent) or other non- coursework degree requirement may consider a range of remedies or sanctions as outlined in Section 5b above.

If the faculty member(s) responsible for the administering the comprehensive examination (or equivalent) or other non- coursework degree requirement believes the finding warrants a sanction more serious than the faculty member(s) may impose, the faculty member(s) will refer the case to the Associate Dean of the School of Graduate Studies. All documents previously used to investigate the case will be forwarded to the Associate Dean of the School of Graduate Studies. The student must be notified in writing by the faculty member(s) that the case has been referred to the Associate Dean of the School of Graduate Studies.

c. Master's Essay, Master's Thesis, Doctoral Dissertation

If, after an investigation of the evidence and consideration of the response by the student, the Associate Dean of the School of Graduate Studies determines that there are no grounds for a finding, all documents related to the case will be destroyed and the student will be informed that the investigation has been dropped.

If, after an investigation of the evidence and consideration of the response by the student, the Associate Dean of the School of Graduate Studies determines that there is sufficient and persuasive evidence on which to make a finding of departure from academic integrity, the Associate Dean of the School of Graduate Studies must set an appropriate remedy or sanction and then notify the student in writing.

Factors that should be considered in assigning a remedy or sanction are as outlined in Section 5 above.

The sanctions that could be assigned are as outlined in Section 5c above.

8. INFORMING THE STUDENT OF THE DECISION

After making the finding, and setting a remedy or sanction within the scope of those available to the instructor, the faculty member(s) responsible, or Associate Dean of the School of Graduate Studies, the student must be informed in writing of the following:

- the details of the finding of departure from academic or research integrity, including the reasons for the finding as supported by relevant, clear and cogent evidence;

- the remedy or sanction;
- the student's right to appeal the finding and/or the remedy or sanction to the Academic Appeal Board of the School of Graduate Studies (see below)
- the deadline for appealing to the Academic Appeal Board;
- the resources available for consultation; the instructor, faculty member(s) or Associate Dean of the School of Graduate Studies will inform the student of the services provided by the Office of the University Ombudsman; and
- the fact that a copy of the finding will be kept on file in the School of Graduate Studies.

A copy of the finding of departure from academic or research integrity must be reported in writing to the student's home department or program.

9. APPEAL OF A FINDING OF DEPARTURE FROM ACADEMIC INTEGRITY

The graduate student has the right to an appeal of the finding of departure from academic or research integrity, and/or the remedy or sanction, through the Academic Appeal Board of the School of Graduate Studies.

Within 10 working days of receiving the written notice and details of the finding, the student may ask the Secretary of the Academic Appeal Board of the School of Graduate Studies to convene an Academic Appeal Board to hear his or her appeal. The student must submit a written statement of appeal within 10 working days of such a request to the Secretary of the Academic Appeal Board of the School of Graduate Studies, attaching all relevant documentation regarding the case and the finding.

The Secretary of the Academic Appeal Board of the School of Graduate Studies shall inform the Department Head or Program Director, and the Graduate Coordinator of the Department or Program, of the request for a hearing by the Academic Appeal Board, and give a copy of the student's written statement to the Department Head or Program Director, and the Graduate Coordinator of the Department or Program.

The Secretary of the Academic Appeal Board of the School of Graduate Studies shall distribute the student's statement to the members of the Academic Appeal Board. Within 10 working days of receiving this statement, the Board shall convene to review the written material. The Board shall, within two further weeks (10 working days), meet with all the parties to the appeal. The student may be accompanied by a University Dispute Resolution Advisor or other support person.

Each party to the appeal shall be given the opportunity to present his or her case to the Academic Appeal Board at the meeting of all parties. Although neither party is precluded from having legal counsel, such counsel is not usually desirable or necessary at this stage of the appeal procedure. The intent is to provide a fair hearing in an atmosphere of relative informality. The student should notify the Secretary of the Academic Appeal Board of the School of Graduate Studies at least 48 hours prior to the meeting if he or she is to be legally represented.

Under normal circumstances, it is anticipated that the appeal can be heard in its entirety at this meeting and that the Academic Appeal Board shall issue its report within a further two weeks (10 working days).

A student may not withdraw from the graduate degree program while the appeal is underway.

10. DISPOSITION OF THE APPEAL OF A FINDING OF ACADEMIC INTEGRITY

Upon completing its review, the Academic Appeal Board may make one or more of the following dispositions:

a. Dismiss the finding: If, after an investigation of the evidence and the review to date, and consideration of the response by the student, the Academic Appeal Board of the School of Graduate Studies determines that there are no grounds for a finding, all documents related to the case will be destroyed and all parties shall be informed that the finding has been dismissed. The Academic Appeal Board shall notify the student in writing of this decision.

b. Uphold the finding: If, after an investigation of the evidence and the review to date, and consideration of the response by the student, the Academic Appeal Board of the School of Graduate Studies determines that there is sufficient and persuasive evidence on which to make a finding of departure from academic integrity, the Academic Appeal Board will uphold the finding. The Academic Appeal Board shall notify the student in writing of this decision.

c. Rule on the sanction(s) imposed to date: In cases where the Academic Appeal Board upholds the finding of a departure from academic integrity, it shall also evaluate the sanction(s) previously determined, and has the authority to either uphold that sanction,

or determine one or more alternate sanctions from Section 5 above. The Academic Appeal Board shall notify the student in writing of this decision.

d. Make recommendations on policy, procedures or principles to the School of Graduate Studies: If the Academic Appeal Board, in hearing a case, identifies matters of policy, procedure or principle that have broad implications for the School of Graduate Studies, it should draw these to the attention of the Dean of the School of Graduate Studies.

The decision of the Academic Appeal Board shall be final and shall be the final appeal through the School of Graduate Studies. The student may appeal further to the University Senate Appeal Board. In their report, the Academic Appeal Board shall inform the student of the services provided by the Office of the University Ombudsman.

11. JURISDICTION WITH RESPECT TO STUDENT APPEALS OF ACADEMIC DECISIONS

All graduate students are enrolled in the School of Graduate Studies (the home Faculty) and follow a particular program in an academic discipline (the home Program). If a graduate student is enrolled in a course which does not belong to his or her home program, and a matter of academic integrity arises, instructors and faculty members are required to follow the graduate level procedures in the relevant Appendix of the Senate policy, Faculty Jurisdiction With Respect to Student Appeals of Academic Decisions.

12. NOTIFICATION/REPORTING FINDINGS TO STUDENTS AND THE SCHOOL OF GRADUATE STUDIES

To ensure consistency and fairness, faculty members involved in academic integrity investigations must contact the student according to the timelines outlined in Section 6 above, and must inform the student in writing of the case, covering all the relevant details as per Section 6, specifically

- the evidence on which the investigation is based;
- the possible remedies or sanctions;
- the student's right to respond to the investigation; and
- the student's right to have representation for any response; the instructor will inform the student of the services provided by the Office of the University Ombudsman.

The student must be informed of the outcome according to the specifics listed in Section 8 above. A copy of the finding will be sent to the School of Graduate Studies and kept on file.

13. REPORTING ACADEMIC INTEGRITY CASES TO SENATE COMMITTEE ON ACADEMIC PROCEDURES

As required by Senate, the School of Graduate Studies shall report each year, in writing, to SCAP on the academic integrity issues or cases they have dealt with along with any suggested revisions to this Policy or their own procedures. The form that will be used by the School of Graduate Studies for this purpose is found on the website of the School of Graduate Studies.

ADMINISTRATION

ADMINISTRATIVE STRUCTURE

The School of Graduate Studies is constituted to administer the policies of the Senate of Queen's University as they pertain to graduate studies. The School embraces all the departments, programs and interdisciplinary schools that offer graduate programs except for those graduate level programs administered by the School of Business.

Graduate departments and/or programs are grouped according to faculty-based Graduate Councils or Committees that govern the academic programs of the graduate students in the related departments.

The governing body of the School is the Graduate Studies Executive Council (GSEC) of the School. GSEC ensures that the Faculty Graduate Councils/Committees establish and follow appropriate procedures to carry out their responsibilities associated with graduate programs within the Faculty/School. Decisions made by GSEC are either recommended or provided as information to Senate and Senate subcommittees as required by SGS or university regulations, and to the Faculty Graduate Councils/Committees.

The Office of the School of Graduate Studies is responsible for the implementation of GSEC's policies and the coordination of the admission and degree programs with the departments/programs. The Vice-Provost and Dean, School of Graduate Studies is the chief executive officer of the School and is responsible to the University Provost.

Administrative Officers

VICE-PROVOST AND DEAN
F. Quadir

ASSOCIATE DEANS
J. Reynolds
M. Straznicky

DIRECTOR, ADMISSIONS AND STUDENT SERVICES
M. Corbett

DIRECTOR, FINANCE AND ADMINISTRATION
L. Lam

Committees of the School

THE GRADUATE STUDIES EXECUTIVE COUNCIL
Chair: Vice-Provost and Dean of Graduate Studies (or delegate)

THE FELLOWSHIP COMMITTEE
Chair: TBA

THE ACADEMIC APPEAL BOARD
Chair: TBA

GRADUATE COUNCILS/COMMITTEES OF THE SCHOOL

Engineering and Applied Sciences Graduate Council

Graduate Departments/Programs

Chemical Engineering, Civil Engineering, Engineering Chemistry, Engineering Physics, Electrical and Computer Engineering, Geological Engineering, Geoengineering, Mechanical and Materials Engineering, Mathematics and Engineering, Mining Engineering

Arts and Sciences Graduate Councils

Graduate Departments/Programs-Humanities

Art Conservation, Art History, Arts Leadership and Arts Management, Classics, Cultural Studies, English Language and Literature, French Studies, Gender Studies, German Language and Literature, History, Philosophy, Religious Studies

Graduate Departments/Programs-Life and Physical Sciences

Biology, Chemistry, Computing and Information Science, Environmental Studies, Geography and Planning, Geological Sciences and Geological Engineering, Kinesiology and Health Studies, Mathematics and Statistics, Physics, Engineering Physics and Astronomy, Psychology

Graduate Departments/Programs-Social Sciences

Economics, Environmental Studies, Geography and Planning, Global Development Studies, Kinesiology and Health Studies, Political Studies, Sociology

Health Sciences Graduate Council

Graduate Departments/Programs

Biomedical and Molecular Sciences, Neuroscience, Nursing, Pathology and Molecular Medicine, Public Health Sciences, Rehabilitation Science, Rehabilitation Therapy, Translational Medicine

Graduate Committee for Business

Graduate Studies and Research Committee in Education

Law Graduate Committee

ADMISSION AND REGISTRATION

The general regulations and administrative procedures presented here are intended to provide guidance for graduate students and for members of faculty involved in graduate study.

ACADEMIC QUALIFICATIONS FOR ADMISSION

- Queen's University Policy on the Basis of Admission for Advanced Study

To satisfy the basis of admission to any advanced-entry professional or graduate degree program at Queen's University, it is expected that previous academic credentials will be from an institution providing an academic environment and education that prepares students for potential success in advanced study at Queen's.

Canadian Credentials

Within Canada, such institutions might reasonably be considered to reflect the following qualities and characteristics:

1) Authority from the provincial legislature to grant degrees

2) Administrative and governance appropriate for a university

a. Academic staff and Senate (or other appropriately elected body) with authority to make decisions affecting academic programs

b. Independent board of governors, or appropriate equivalent

c. Senior administration, normally a President and Vice-Presidents

3) Approved, clearly articulated mission statements and academic goals that include a commitment to teaching, research, and community service.

4) Teaching mission at a university level with the majority of programs at that level.

5) Offer a full program or programs of undergraduate degree and/or graduate degree studies.

a. Academic staff with PhDs or other appropriate terminal degrees

b. Undergraduate programs taught by senior academic staff

c. Quality assurance mechanisms, with provision for periodic evaluation of academic staff

d. Access to library and other learning resources

e. The periodical monitoring of graduate outcomes

f. Academic counseling and other student services

g. Financial resources to meet its mission statement and goals

6) Undergraduate degree programs, including professional degrees, are characterized by breadth and depth in the traditional areas of the liberal arts and/or sciences.

7) A proven record of scholarship, academic inquiry and research

a. Expectation that faculty will be engaged in peer-adjudicated external reviews

b. An environment that focuses on intellectual inquiry

8) An environment that respects the search for and communication of knowledge, respects academic freedom, encourages high standards of achievement, and values intellectual honesty, fairness, and integrity.

International Credentials

Academic credentials obtained outside of Canada would normally be expected to be from an accredited university-level institution pursuant to the national accreditation system within the issuing country.

Admission to graduate degree programs at Queen's University

Applicants who wish to be considered for admission to a graduate degree programs must hold the minimum qualifications as listed above. Departments/Programs may require higher qualifications and/or require applicants to write the Graduate Record Examination.

ADDITIONAL NOTES ON ADMISSIONS CRITERIA

1. Members of faculty at Queen's University above the rank of lecturer are not eligible to register in a degree program in the Department or Program (or where there is no Department, the Faculty or School or program) in which they hold appointments.

2. Members of faculty, above the rank of lecturer, who wish to proceed to a graduate degree in another department or program or faculty must obtain permission
1) from their Head of the Department/Program and the Dean of the Faculty in which they hold an appointment;
2) from the Head of the Department/Program in which the graduate studies are to be undertaken;
3) from the Dean of the School of Graduate Studies.

The guidelines for granting such permission are delineated in the Minutes of the Senate Meeting held on 27 March 1980.

Master's Program

The minimum qualification for admission is second class standing in one of the following degrees, awarded by an eligible institution according to the criteria of the Queen's University Policy on the Basis of Admission for Advanced Study:
a. an honours bachelor degree in Arts or in Science,
b. or a bachelor degree in Applied Science or Law,
c. or the degree of Doctor of Medicine,
d. or equivalent.

The qualifications of an applicant who has a bachelor's general degree with not less than a B grade average and has completed one academic year of satisfactory full-time study as a qualifying student may be considered as equivalent. See Qualifying Student section.

NOTE: For the master's program in Education, refer to the departmental prescription for the admission qualifications.

Doctoral Program

The minimum qualification for admission is one of the following:

a. successful completion of a master's degree.

b. promotion from a Master's program to a doctoral program: students who have been registered full time for at least two terms and before completing five terms in a master's program at Queen's University, who have first-class standing, and who show exceptional promise in their research, may be considered for promotion to a doctoral program in the same Department/Program, without completion of the master's degree. Promotion to a doctoral program requires the recommendation of the Department/Program, the approval of the Faculty Graduate Council/Committee according to its established procedures, and the approval of the School of Graduate Studies.

c. direct entry: students with unquestionably superior standing in their honours bachelor's degree, or equivalent, may be considered for direct admission to a doctoral program. Students admitted in this way must complete a minimum of two session-length or four term length graduate courses during the doctoral program.

NOTE: Students admitted to a doctoral program under a., b. or c., may not revert to the master's program within the same department/program. In exceptional circumstances, the student may, after withdrawal from the doctoral program, seek readmission to the master's program in the same department/program, or make application for admission to a master's program in another department/program, through the normal application procedures.

ACCEPTANCE

Assessment of the academic background and the ability of applicants is the responsibility of the Department/Program concerned. Recommendations for acceptance of applicants are made by the Department/Program to the School of Graduate Studies, taking into consideration the availability of faculty, financial support, and facilities at that time.

Official letters of acceptance are sent only by the School of Graduate Studies, and are only valid for the academic year indicated in them. A successful applicant must reply at an early date, declining or accepting the offer. If circumstances prevent acceptance in the term offered, the Department/Program reserves the right to reconsider the acceptance. If the applicant wishes to commence study in an academic year subsequent to the one indicated, they must submit another application.

ACCOMMODATION FOR GRADUATE STUDENTS WITH DISABILITIES

Policy Statement

Queen's University is committed to providing accommodation for students with disabilities who are enrolled in any of its graduate programs. University administration, faculty, staff and other students are expected to support, to the point of undue hardship, all reasonable individualized and appropriate accommodation plans that preserve the program's academic standards and adhere to the principles of academic integrity.

Guiding Principles

Queen's University is committed to creating a community that respects the dignity and worth of all persons who seek to participate in the life, work and mission of the University and to maintaining a culture that is welcoming, accommodating and supportive of persons with disabilities.

The essence of accommodating graduate students with disabilities is individualization and there is no set formula to be applied in developing accommodation plans. Each student's needs are unique and must be considered afresh when an accommodation request is made. The University has an obligation to provide the most appropriate accommodation; that is, the accommodation that most respects the dignity of the individual with a disability, meets individual needs, and promotes integration and full participation.

The University, under the Ontario Human Rights Code, is required to accommodate graduate students with disabilities to the point of undue hardship. It is important to recognize that inconvenience, potential negative reaction from faculty or other students, third party preferences, collective agreements or contracts are not considered in the test of undue hardship.

Accommodations must preserve the academic standards and uphold the essential requirements of a program while adhering to the principles of academic integrity (see General Regulation Academic Integrity Policy). Essential requirements refer to the knowledge and skills that must be acquired and/or demonstrated in order for a student to successfully meet the learning objectives and the degree level expectations of a course or program of study.

Mediating individual accommodation requests takes into consideration a student's disability and program-specific requirements. There can be no legitimate claim that

academic standards would be compromised by requested accommodations unless it can be demonstrated that the provision of the accommodation would alter the essential requirements of a degree program.

Eligibility for consideration for internal scholarships

Students registered as part-time in a graduate degree program to accommodate a documented permanent disability may be eligible for internal scholarships and awards when the terms of the awards permit this flexibility.
The School of Graduate Studies will extend the normal funding eligibility period for graduate students whose documented permanent disability impacts their academic progress such that more time to complete their degree is required; a request for such extension should normally be made within the first term of study. An extension provides students with the option of distributing the normal funding package over a longer period of time. The allocation of funding support beyond the funding eligible period will be considered on a case-by-case basis, based on the principle of individualized and particular accommodations and, if granted, will normally be limited to no more than one additional term for Master's students or one additional year for doctoral students.

Roles and responsibilities of students, faculty, and staff

Information about the roles and responsibilities of all parties concerning accommodation can be found in the revised Guide to Graduate Supervision and on the School of Graduate Studies' website.

AGREEMENTS AND EXCHANGES

Queen's-Trent Agreement

This is an agreement with Trent University to permit suitably qualified faculty at Trent University to offer graduate courses and undertake the supervision of graduate students enrolled at Queen's University. All graduate students in courses offered by, and/or supervised by, faculty at Trent University who are participating in this agreement will be registered at Queen's University. Initial inquiries should be directed to the School of Graduate Studies at Queen's or the Graduate Office at Trent University.

Queen's/Royal Military College Visiting Graduate Student Agreement

Students from either university are permitted to take courses at the graduate level at the host university for degree credit at their home university. Courses may not be audited. Fees are paid at the home university.

Ontario Visiting Graduate Student (OVGS) Plan

This plan allows a graduate student of an Ontario university to take graduate courses at another Ontario university while remaining registered at the home university. The plan allows the student to bypass the usual application for admission procedures to the host university and facilitates transfer of course credits to the home university. The student pays fees to the home university and is classed as 'visiting graduate student' at the host university, to which no fees are paid. The student must make application for study under this Plan by completion of a special application form which is available at departmental/program offices or from the School of Graduate Studies. Students may not audit courses under this plan nor enroll in any courses which are not to be credited towards their degree program. The student must be registered at Queen's as full-time off-campus.

German Academic Exchange Services (DAAD)

The German Academic Exchange Service (DAAD) is a publicly funded independent organization of higher education institutions in Germany. Among other funding opportunities, DAAD offers research grants and/or study scholarships for students with at least a Bachelor's degree to either study or do research in Germany.

Departments/Programs are informed annually of this competition and the applicable deadline(s). As a partner university with DAAD, Queen's University may nominate one "priority candidate" for these competitions. The priority candidate will be placed in a separate application pool in the DAAD national competition. Even with this status, competition for the limited number of awards is still very strong. A subcommittee of the Fellowship Committee of the School of Graduate Studies will evaluate all eligible applications using the same criteria that the DAAD Selection committee will use: the overall excellence of the academic record, the proposed plan of study/research, and the applicability of the proposal to German institutes of higher education, archives or research institutes. Although Queen's can only nominate one priority candidate, all other, non-nominated, eligible applications will be forwarded to DAAD and placed in the general competition.

The School of Graduate Studies administers the applications for the DAAD annual competitions for:

Study Scholarships: available to highly qualified undergraduates enrolled in their final year, and graduate students of all disciplines, to provide the opportunity to study in Germany, or complete a postgraduate or Master's degree program. Individuals wishing to complete a doctoral program in Germany are also invited to apply for a Study Scholarship. The Study Scholarship is for 10 months and must take place during the German academic year (October 1 to July 31). Students in degree-granting courses in Germany may receive an extension of up to one year for Master's programs and two years for doctoral programs. All study scholarship holders must take courses at a German university.

Research Grants: available to highly qualified students enrolled in any graduate program, including Ph.D. candidates who are nearly complete (all but dissertation) who wish to carry out post-doctoral research at universities or institutes in Germany. Current post-doctoral fellowship holders at Queen's University are also encouraged to apply. All academic disciplines are eligible. Research grants can be either short-term (1to 6 months) or long-term (7 to 10 months). Short-term grants must occur between August and January. Long-term grants must occur within the time frame of the German academic year (October 1 to July 31).

NOTE: Undergraduates are NOT eligible to apply for Research Grants, but have many other opportunities to apply for funding for study or research in Germany. Visit www.daad.org to find out more.

Other Exchange Opportunities

Queen's University has reciprocal exchange agreements with approximately 175 institutions. Some agreements are faculty-specific while others include multiple faculties. Some are specific to a particular Queen's department/program. Not all exchanges can accommodate graduate-level students. More information is available from the University's international studies website.

APPLICATION FOR ADMISSION

Initial inquiries concerning graduate study at Queen's University may be made to the Department or Program offering the graduate degree program.

Application for admission and subsequent correspondence must be directed to the School of Graduate Studies, Room 425 Gordon Hall, Queen's University, Kingston, Ontario K7L 3N6.

A non-refundable application fee of $105 (Canadian) payable to Queen's University must accompany each application (this amount subject to change without notice).

Although applications may be submitted at any time, most applications are adjudicated in March, so application should be made early in the year. However, certain departments/programs do have earlier, firm, deadlines. It is the applicant's responsibility to contact the Department/Program for information on their deadline dates. Applicants from outside Canada should apply before the beginning of the year to compensate for possible delays.

Applicants are responsible for ensuring that all required application documentation is received by the School of Graduate Studies. Applications must be considered complete and all required application documentation must be received, before a decision regarding acceptance will be made.

Formal application for admission is comprised of the following:

a. Application form: There are two ways to apply to graduate studies at Queen's University:

1. **ONLINE APPLICATION**: To submit an online application applicants must access the online application site, https://eservices.queensu.ca/apps/sgsapp and follow the instructions to first create an account and then complete and submit the application. Submission includes verification that the information submitted is true and accurate, and payment of the non-refundable application fee online using a Visa or MasterCard.

2. **PAPER APPLICATION (ONLY IF UNABLE TO APPLY ONLINE)**: Prospective applicants unable to apply online may request a paper application package from the graduate department/program they wish to apply to.

Note: For either application procedure, the applicant is responsible for ensuring that any and all required supporting documents, letters of reference, transcripts and test scores (if applicable) are received by the School of Graduate Studies. Hard copy documents are to be mailed directly to the School of Graduate Studies, Room 425 Gordon Hall, Queen's University, Kingston, Ontario Canada K7L 3N6.

b. Transcripts: A complete application must include official, up-to-date transcripts for all current and previous study the applicant has listed in the Academic Background section of the application.

Acceptable methods for submitting transcripts:

i. Transcripts can be uploaded to the online application, as PDF files. The transcripts must be scanned (black and white recommended) and saved as a PDF file, and uploaded successfully. Opening any sealed transcript envelope from a university and scanning the transcript will not render the transcript unofficial for the purpose of the application evaluation. For applicants who received more than one degree from the same university, one PDF file of official, up-to-date transcripts for all degrees received from that university can be uploaded.

ii. If a transcript or transcripts cannot be successfully uploaded to the online application, applicants are responsible for ensuring that an official transcript or transcripts of all current and previous university-level studies are sent to the School of Graduate Studies by all universities previously attended. All hard copy transcripts received as part of an application for admission must be received in sealed envelopes.

Final transcripts: Hard copy original official transcript showing degree completion and conferral, will be required from all applicants who accept an offer of admission to graduate studies at Queen's University. These final transcripts are to be sent directly from the issuing institutions to the School of Graduate Studies, in sealed envelopes.

Other transcript notes:

- Transcripts in languages other than English or French must be accompanied by an English or French translation provided by the institution issuing the transcript.
- Photocopied transcripts or those printed from a university website are not permitted.
- Degree and graduation certificates must be included if the transcript does not indicate the type of degree and date granted.
- Transcripts are to be sent directly from the issuing institutions to the School of Graduate Studies, in sealed envelopes.
- All hard copy transcripts received as part of an application for admission must be received in sealed envelopes.

- Transcripts submitted with applications become the property of Queen's University, are subject to verification, are not available for copying and will not be returned to the applicant.
- Official transcripts are NOT REQUIRED for any study of any kind carried out at Queen's University, Kingston, Ontario. The School of Graduate Studies will access the student record directly for applicants who have attended or are currently attending Queen's University.

c. Letters of Recommendation: For applicants to research programs, two current academic recommendations are required from professors under whom the applicant has recently studied. It is recognized that certain applicants to some programs may have difficulty in obtaining academic references and that it may be more appropriate to get references from professionals or supervisors. In such cases references from other sources containing information acceptable to the Department/Program or School and the School of Graduate Studies may be considered. However, all effort should be made to include academic recommendations.

Two Professional letters of recommendation (e.g. letters from an employer or workplace supervisor) can be submitted in support of applications to professional graduate programs. For applicants who apply to a professional graduate program, a Professional reference form will be generated for their referees.

In all cases the information in recommendations should relate to the ability of a prospective student to undertake the work in the program to which he or she is making application.

Referees normally use and submit their letter of recommendation or reference form to the School of Graduate Studies via a secure online reference form submission process. Letters of reference sent as attachments via electronic mail (email) are unacceptable substitutes for this secure online reference form.

Photocopied or stale dated letters (letters that were issued more than one year prior to the application date) are unacceptable.

Other universities' references forms are not to be substituted for the reference form for an application to Queen's University.

Some departments/programs have special requirements regarding letters of recommendation (e.g., three letters may be required, etc.). It is the applicant's

responsibility to consult the appropriate department's/program's application procedures for details.

d. Additional Information/Documentation: Some departments/programs require additional documentation such as a current course list, GRE or written sample of work. It is the applicant's responsibility to consult the appropriate department's/program's application procedures for details.

e. Test scores: All required test scores must be received directly from the testing agency, before the application can be considered complete.

f. Application fee: There is a non-refundable application fee of $105.00 CAN for each application to a program (this amount subject to change without notice). Those applying online must pay the application fee using a MasterCard or Visa credit card. Those applying with a paper application must submit with that paper application a certified cheque or money order of $105.00 CAN, payable to Queen's University.

OTHER APPLICATION NOTES:

- A student who wishes to enter a doctoral program while still studying on a master's program at Queen's University must make a formal application to the PhD.
- As Queen's University is committed to the integrity of its student records, each applicant is required to provide their complete, legal name. Any requests to change a name, by means of alteration, deletion, substitution or addition must be accompanied by appropriate supporting documentation.
- Information submitted as part of the application to graduate studies at Queen's University will be part of the application materials only, and will be reviewed by those with the proper authority to review graduate applications.
- Personal health information sent with the application or in the application, is reviewed only by those with the proper authority to review graduate applications, not by any medical or health professionals, nor by senior administrators at the university.
- Application for Fellowships: All students accepted for admission are considered for limited departmental/program funding. Prospective or enrolled students do not make individual application for most internal fellowships administered by the School of Graduate Studies. Departments/Programs are notified of all annual fellowship competitions, and nominate eligible students appropriately. Most of these fellowship allocations are made in June. Financial assistance is limited and applicants should also investigate all possible funding sources external to

Queen's University. Additional information may be found under Awards and Financial Assistance.

Comprehension of the English Language: At Queen's University English is the language of instruction and communication. Proficiency in English is, therefore, a prerequisite for admission. Applicants whose first language is not English or who have not recently studied for at least one complete year at a post-secondary institution where English is the official language of instruction, will be required to obtain satisfactory results in an English language proficiency test, as part of the application process, and before their application will be considered complete. For more information, go to the International Students regulation below.

EQUITY ADMISSION POLICY

Queen's University School of Graduate Studies is committed to enhancing diversity in graduate education which includes ensuring mechanisms for applications from prospective students who may not have had opportunity and advantage equal to others to be considered. In recognition that life circumstance may prohibit, present barriers, and/or discourage access to pursue advanced degrees, due consideration shall be given by the applicable graduate program personnel to the non-academic factors identified by the applicant, and the applicant's special circumstances and unique qualities. Traditional measures of an applicant's academic performance will be considered accordingly.

FEES

For complete information about tuition fees and ancillary fees information, please review the information on the website of the Office of the University Registrar, here: Graduate Fee Information.

Payment of Fees

Please refer to section Payment Methods, on the website of the Office of the University Registrar.

NOTES

1. Students are responsible for making fee payments according to the fee dates. Students are expected to access the university's online student services system (SOLUS) to determine account balances and charges.

2. Students registered in two degree programs simultaneously at Queen's University are required to pay tuition fees for each degree program, except those graduate students who are completing a Master's program and simultaneously beginning a Ph.D. program in the same department/program and who have been approved for dual registration. In this case tuition fees are payable for the full-time program. Student activity fees are assessed only once. See the general regulation Dual Registration for more details.

Non-Payment of Fees and Charges

Students who have not paid their fees by the prescribed due dates will be assessed a service charge on the unpaid month-end balance, and until the debt is settled. The service charge is assessed and administered by the Office of the University Registrar.

Students with fees not paid by the due dates will i) not receive academic results; ii) not be permitted to register in a subsequent term until the debt is settled. The set service charge continues to be assessed until the debt is settled.

See Administrative Fee Information, Service Charges, for complete information.

Any student who has an unresolved grievance concerning tuition fees should contact the Office of the University Registrar, Gordon Hall, Queen's University.

Readmission Fees

Students who fail to register, to maintain continuous registration, and/or to pay tuition fees for any term before the degree program requirements have been fulfilled, are normally considered to have withdrawn and will be required to apply for readmission. Students who are successful in gaining readmission will be assessed readmission fees, at the appropriate current tuition fee rate per term for the number of terms away to a maximum of three terms. Thereafter, students will pay the appropriate term tuition and related fees until the completion of the program.

NOTE: For details on how to pay fees, see the information on the website of the Office of the University website here: Payment Methods.

Refund of fees due to withdrawal from program

A student who elects to withdraw after registration may be eligible for a refund of tuition and student activity fees which have been paid for that session provided that an Academic Change Form for withdrawal is completed and returned together with the student card to the Office of the University Registrar, Gordon Hall.

Refund of fees due to completion of program

A student who completes a program (a Letter or Form of Completion has been submitted to the Office of the University Registrar from the School of Graduate Studies) mid-term may be eligible for a partial refund of tuition and student activity fees which have been paid for that term, provided that the student card is returned to the Office of the University Registrar. The refund will be calculated in the same way Refund of Fees due to withdrawal. Some programs require a minimum registration period of twelve months and corresponding tuition fees.

Receipt for Income Tax Purposes

The Tuition, Education and Textbook Amounts Certificate (T2202A) is available for students (and former students) to view and print by the end of February each year for the prior calendar year (forms are not mailed).

Complete information is available on the Office of the University Registrar web site.

Canada Revenue Agency's guidelines and information about income tax can be obtained directly from the CRA website.

Hospital and Medical Coverage

All full-time students and their dependents must have insurance to cover medical and hospital costs in order to protect their interests and the interests of the University community. Students shall be required, at Registration, to produce evidence of hospital and medical insurance effective in Ontario.

Queen's has negotiated a health insurance plan for international students.
For information, please contact the Queen's University International Centre (QUIC).
Telephone: 613-533-2604
Fax: 613-533-3159
Email:uhip@queensu.ca
Website for health insurance information

Details are also available from Office of the University Registrar's website.

Address Information

It is the student's responsibility to ensure that the University has at all times, complete and accurate address information. You are reminded that any change in telephone number, emergency contact, mailing address, etc. must be provided to the Office of the University Registrar. For details, see the Registrar's website.

Citizenship and Tuition Fee Assessment

If you are not a Canadian citizen, Permanent Resident (Landed Immigrant), or a person registered as an Indian within the meaning of the Indian Act, you are charged the international tuition fee.

A number of exemptions may apply to international graduate students. A short description of each of these categories is found here under Exemption Categories.

Each of these cases must be examined individually by fee assessment staff in the Office of the University Registrar, Gordon Hall, telephone 613 533-6894.

Status Change

If your status in Canada changes during the term it must be reported with supporting documents to the Office of the University Registrar. Documentation must be provided before the Ontario government enrolment count dates to affect fees for that term (1 November for the Fall term, 1 February for the Winter term, 30 June for the Summer term, and 23 July for the course-assessed Master of Education program).

INDIGENOUS STUDENT ADMISSION POLICY

Queen's University School of Graduate Studies welcomes and encourages inquiries and applications for all our graduate programs from Indigenous[1] candidates. Indigenous candidates' academic, cultural, personal and professional background, and other factors indicative of capacity for graduate level study and research, will be considered and evaluated accordingly on an individual basis by the applicable graduate program personnel. To be considered under this regulation, applicants must self-identify as Indigenous upon application for admission to Queen's University School of Graduate Studies.

[1]For the purposes of this regulation, Indigenous is defined as First Nation, Métis and Inuit (FNMI).

INTERNATIONAL STUDENTS

Language Requirements

At Queen's University English is the language of instruction and communication. Proficiency in English is, therefore, a prerequisite for admission. Applicants whose first language is not English or who have not recently studied for at least one complete year at a post-secondary institution where English is the official language of instruction, will be required to obtain satisfactory results in an English language proficiency test, as part of the application process, and before their application will be considered complete.

The following English Language Proficiency tests are accepted by the School of Graduate Studies at Queen's University:

- Test of English as a Foreign Language (TOEFL)
- Michigan English Language Assessment Battery (MELAB)
- International English Language Testing System (IELTS)
- Pearson Test of English Academic (PTE Academic)

In these tests, the School of Graduate Studies at Queen's University requires the following minimum scores:

1. TOEFL Internet-based Test (TOEFL iBT): The minimum overall score is 88, made up of the minimum scores in each component test as follows:

Writing test: 24/30
Speaking test: 22/30
Reading test: 22/30
Listening test: 20/30

Applicants must have the minimum score in each test, as well as the minimum overall score. Note that some departments/programs have higher minimum TOEFL iBT requirements.

2. MELAB: 80 (minimum overall score)

3. IELTS: 7 (minimum score, academic module)

4. PTE Academic: 65 (minimum overall score)

These tests are offered widely around the world. International students applying to Queen's should arrange to take one of these tests in sufficient time for the results to be available at the time of application. It is the applicant's responsibility to consult the department/programs, and the Application Procedures documentation, for more details.

OTHER NOTES on English language proficiency for international applicants and students:

1. Any applicant whose first language is not English, but who, within the 12 month period prior to the month of application, has studied for at least one complete year at a post-secondary institution where English is the official language of instruction, may submit with their application a request to be exempted from the English language proficiency test requirement.

Proof will be required that it has not been more than one year since the applicant was a student at the post-secondary institution and also that English is the language of instruction there. Acceptable proof of this is the original, official transcript, received from the issuing post-secondary institution or uploaded by the applicant as part of the application for admission. If it is not stated on or evident from the transcript that English is the language of instruction, the applicant must make arrangements for a separate, official letter that confirms this to be sent to the School of Graduate Studies from the issuing post-secondary institution.

When the official original transcript or other official letter is received by the School of Graduate Studies, the request for exemption will be reviewed. The applicant will be informed of the decision.

A request for an exemption from this requirement will not be considered prior to submission of the application.

A request for an exemption from this requirement will not normally be considered for any applicant who, at the time of application to graduate studies, has a passing score in one of the accepted tests of English language proficiency listed above which is still valid (not expired).

A request for an exemption from this requirement will not normally be considered for any applicant who, at the time of application to graduate studies, has taken one of the accepted test of English language proficiency listed above but failed to get the minimum score required.

2. If a final grade of A- (A minus) or more in ESLA 140 or ESLA 150 from Queen's University's English for Academic Purposes (EAP) Program is achieved at the time of application, an English language test score may not be required. See Queen's University School of English for details.

3. Students may be required to take a remedial course in English and may be required to fulfill additional requirements if accepted into a graduate program.

Application Procedures

While the application procedures for international students are no different than those for Canadian applicants, generally more time is required to receive the necessary documentation and to evaluate the academic record. Two letters of reference are required from professors under whom the applicant has recently studied. Official transcripts for all undergraduate programs and subsequent graduate work must also accompany the application. Given that many international students who apply to Queen's do so from a great distance, it is recommended that sufficient time be allowed for these materials to be received. January to March are heavy months for processing applications for admission in September. It is suggested that the application process begin as early as September of the year preceding the year in which you wish to enter the program. See also the Application for Admission section above for details.

Study Permit

International applicants who have been accepted into the School of Graduate Studies must obtain a Study Permit and visa (if required) and complete any required immigration procedures.

Information about applying for Canadian immigration documents is available through the Queen's University International Centre (QUIC).

Fees

For complete information about tuition fees and ancillary fees information, please review the information on the website of the Office of the University Registrar, here: Graduate Fee Information.

Health Insurance

International students must have health insurance coverage by enrolling in the University Health Insurance Plan (UHIP). This mandatory health plan provides basic medical coverage for most doctor and hospital services in Ontario.

The following individuals are required to have UHIP coverage each year:

All international members (student or non-student) and their dependents.
All students, non-students and their dependants who do not have valid Canadian provincial/territorial health insurance (such as: Alberta Health, OHIP, etc.).

More information is available from the Queen's University International Centre (QUIC):

Telephone: 613-533-2604
Fax: 613-533-3159
Email:uhip@queensu.ca
UHIP Website

Student Support

The School of Graduate Studies attempts to ensure that as many international graduate students as possible who require tuition assistance receive one of several types of tuition awards. International students should inquire of the department/program about their eligibility and needs for tuition awards.

Queen's University International Centre

The Queen's University International Centre (QUIC) is an international education support service for students, faculty and staff at Queen's. Through its activities the Centre promotes an internationally informed and cross culturally sensitive university community.

QUIC has been working to promote cross-cultural understanding for more than 50 years through a wide range of services and programs. The Centre's history dates back to 1961, when the International Club was established at Queen's to help international students adjust to life at Queen's and in Kingston. QUIC provides support for international students and their families throughout their stay at Queen's. The International Student Advisor will provide guidance to students on issues including immigration, travel, housing, finances, academic and personal matters. During the academic year, services and programs offered include on-site orientation programs for

the fall and winter terms, a host-family program, and practical information sessions on topics of interest to all students. QUIC is located in the John Deutsch University Centre.

Telephone: 613-533-2604
Fax: 613-533-3159
QUIC Website

MATERNITY AND PARENTAL LEAVE

a. Graduate students who wish to take a maternity and/or parental leave from their program of study may register as inactive without prejudice to their academic standing. The maximum duration of the maternity and parental leave is two terms and two terms respectively. Both parents are entitled to a parental leave. In addition, mothers are entitled to a maternity leave. The maternity and/or parental leave would normally be taken during the first year of the child's life, or, in the case of adoption of a child, within 12 months after the child first comes into the custody of the parent. A fee waiver for the period of the leave will be granted by the university through the School of Graduate Studies.

Students request this status by submitting the Maternity/Parental Leave Request Form.

b. For students taking a maternity and/or parental leave, the statutory periods for completion of degree programs (see Time Limits for Completion of Programs), together with the prescribed maximum periods of eligibility for financial support from the School of Graduate Studies' sources will, on resumption of studies, be extended by the time-period taken for the leave.

c. Awards to students which are derived from the resources of the School of Graduate Studies (such as but not limited to, Dean's Awards, International Tuition Awards, internal Fellowships and Scholarships, and Queen's Graduate Awards) will be suspended for the duration of a maternity and/or parental leave. On resumption of studies, the award will recommence to make up the full time-span for which support was originally granted.

d. Students holding externally funded fellowships, or other forms of support derived from sources external to the University, must observe the regulations prescribed by the granting agency concerned.

e. A change of status to inactive may also impact repayment requirements of any student loan that the student currently receives or has ever received, including any

provincial and/or federal student loans, or loans from any other student loan provider. It is the student's responsibility to be aware of how a status change to inactive impacts any student loan(s).

f. Some doctoral students may qualify for maternity/parental leave funding. See Maternity/Parental Leave Funding for complete details.

MEDICAL LEAVE FOR GRADUATE STUDENTS

Without prejudice to their academic standing, graduate students may apply for a leave of absence on medical grounds, for one term (4 months) and up to a maximum of three terms (12 months). Students are required to send a request for a medical leave of absence in writing to the Director, Admissions and Students Services, School of Graduate Studies, and must provide documentation from a doctor or health care practitioner to support a medical leave of absence for the duration requested.

Students will be registered as inactive for the duration of the approved medical leave. A tuition fee waiver for the period of the medical leave will be granted. It is understood that students on approved medical leave will not undertake academic or research work during the period of leave.

When the approved medical leave expires or is terminated by the student, it is expected that the student will return to active status with the same registration status held immediately prior to the period of medical leave. The student is responsible for clearing past debt (if any), payment of fees or making fee payments arrangements by the deadline of the term in which they return to active status, and ensuring registration in a course or courses in the term in which they return to active status.

For students granted an approved medical leave, the statutory periods for completion of degree programs (see Time Limits for Completion of Programs), together with the prescribed maximum periods of eligibility for financial support from School of Graduate Studies sources will, on resumption of studies, be extended by the time-period taken for the leave.

Graduate students on medical leave are not eligible to receive awards or financial support from the resources of the School of Graduate Studies. This includes any and all internal awards (awards, prizes, bursaries, scholarships, fellowships) all of which will be suspended at the onset and for the duration of, and reinstated at the termination of, the medical leave period. Upon return of the student to active status, every effort will be made to make up and maintain the total financial support originally granted.

Students holding externally funded fellowships, or other forms of support derived from sources external to the University, including research assistantships, must observe the regulations prescribed by the sources of the funding concerned.

A change of status to inactive may also impact repayment requirements of any student loan that the student currently receives or has ever received, including any provincial and/or federal student loans, or loans from any other student loan provider. It is the student's responsibility to be aware of how a status change to inactive impacts any student loan(s).

International graduate students should contact Queen's University UHIP Administrator since UHIP coverage could be affected by a change of status to inactive for a medical leave.

QUEEN'S UNIVERSITY STUDENT CODE OF CONDUCT

Queen's University has a Student Code of Conduct to describe the standard of behaviour to which its students will be held.

The complete document is found on the University Secretariat website.

Contravention of the terms of conduct published here or of any other applicable University policy by any Queen's student may lead to disciplinary consequences.

REGISTRATION

All new graduate students must register prior to their initial term for the ensuing terms in the current academic year. All continuing students must register each year for the full academic year until the completion of the requirements of their program of study. At the beginning of the academic year, students must confirm their registration status through their home department/program, and complete online registration by the stated deadlines.

Any student with a debt to the University will not be permitted to register or to receive examination results, official transcripts, or marks reports until the outstanding account is settled in full or until an acceptable arrangement for settling the account is made. In no case will a diploma be released to a student with a debt to the University.

All graduate students register in their programs electronically.

To maintain continuous registration, graduate students normally have to be registered in a course or courses for each term (Fall, Winter, and Summer) of the full academic session.

Late Registration Charges, Failure to Register, and Readmission

a. Late Fee: For planning purposes, the University needs to know by certain dates, how many students plan to register for the upcoming session. Anyone who does not complete the applicable steps to registration by the applicable deadline, is charged a Late Fee.

Students who have not registered and paid tuition fees or made acceptable tuition payment arrangement before September 1 will be charged a Late Fee effective September 2, unless they have previously been granted permission to register late by the School of Graduate Studies.

For information on this fee please refer to the Dates and Deadlines information on the website of the Office of the University Registrar.

b. Failure to Register: A graduate student who fails to register for any term will be considered to have withdrawn from their program of study. Any student who becomes withdrawn due to failure to register, must apply for readmission if they wish to resume their studies. Readmission is not guaranteed.

c. Readmission: A former graduate student who has withdrawn voluntarily or who was withdrawn due to failure to register, may be considered for readmission to complete that degree. For readmission, the student must apply to the School of Graduate Studies through the normal application procedures (see Application for Admission). The Department/Program will review the application for readmission and decide whether or not to support readmission of the student to complete the degree. If readmission is supported, the Department/Program must recommend, and the School of Graduate Studies approve, readmission to the graduate degree program, and the period of time to be allowed for completion of it. Readmission is not guaranteed. Readmission fees are normally assessed (see Readmission Fees).

Change of Registration

Any change in biographical information can be reported to the Office of the University Registrar electronically, or recorded by the student on a biographic change form and submitted to the Office of the University Registrar.

Changes in a student's program of study must be approved by the Department/Program and the School of Graduate Studies.

Course Registration

Registration in courses or any changes made must be recorded on academic change forms by the deadlines for course changes indicated in the annual Sessional Dates. This does not imply that the student has the right to enter a course after commencement of instruction. Permission to do so is at the discretion of the instructor.

Students who want to add or drop a course after the course registration deadline must obtain approval from the School of Graduate Studies. A written explanation for making the request after the deadline, as well as a written statement of support from the student's home department/program, must be sent to the School along with the completed and signed graduate academic change form.

Courses that are dropped after the course registration deadline remain on the student's official transcript. They are denoted as DR (dropped).

Dual Registration

A student who proposes to study in two degree programs at the same time, at Queen's University, of which one or both are graduate degree programs, must obtain permission for dual registration, each term, from the School of Graduate Studies and the Departments/Programs concerned.

A student who is permitted dual registration must register in each degree program, and may be full-time in only one.

Students will pay tuition fees for each degree program unless the degree programs are both graduate degrees within the same graduate department/program.

STUDENT CATEGORIES

Graduate Student

At Queen's University, a graduate student is a student who is registered in the School of Graduate Studies in a graduate degree program.1

In the letter of acceptance a new graduate student may be designated as preparatory or provisional.

a. Preparatory: Preparatory status implies that, while having the academic qualifications for graduate study, the applicant's academic background in the chosen field of study is inadequate and consequently, prerequisite course work will be required in addition to that prescribed for the degree. Prerequisite courses cannot be credited to the main program. Preparatory graduate students must expect to take longer to complete the degree program.

b. Provisional: Provisional status implies that, because the academic background and ability could not be appraised from the application for admission, the acceptance is conditional on the applicant demonstrating adequate qualifications to the Department/Program within the initial two terms. If this proviso is not fulfilled, the student will be required to withdraw. NOTE: The provisional designation will only be removed if this is recommended by the Department/Program to the School of Graduate Studies.

1 "degree program" encompasses all degree programs, joint degree programs, collaborative degrees, co-tutelle degree arrangements, graduate level certificate and diploma programs, and professional graduate level programs under the administration of the School of Graduate Studies.

Qualifying Student

A qualifying student is a student who, having an academic record showing potential for graduate study, has been admitted to the School of Graduate Studies with a degree that is less than the equivalent of an honours bachelor's degree. The student will be required to take a make-up program during a period of qualifying study not exceeding one academic year. If, at the end of this qualifying year, the Department/Program is satisfied with the caliber of work, the student may, in competition with other applicants, be recommended for acceptance to a graduate degree program.

Special Student

A Special Student is a graduate or equivalent who elects to take one or more graduate courses, but who is not registered in a graduate degree program at Queen's University. Students who register in this category do so normally as enrichment to their professional fields.

Failure to be admitted to the degree program of choice does not necessarily mean the applicant qualifies for, or will be considered for, entry as a special student.

To receive permission to take a graduate course as a Special Student, application must be made to and reviewed by the relevant graduate program or department, and approved by the School of Graduate Studies.

If a person wishes to take more than one course from more than one department/program under this status, separate applications to each department /program are required. If a person wants to take courses as a special student in more than one term (i.e. Fall term and Winter term) separate Special Student applications to each term are required.

All policies and procedures regarding courses and course work requirements apply. See Course Work Requirements on the General Regulations page.

NOTES

Special students are not entitled to audit courses.
Special students will be charged at the part-time Master's rate if they take 1 or 2 courses, and at the full-time Master's rate if they take 3 or more courses.
Domestic students will be assessed domestic student tuition charges; international students will be assessed international student tuition charges.
Special students are required to pay Student Activity Fees.
A student who takes courses in this manner is not allowed a waiver of normal entrance requirements to any subsequent graduate degree program.
Upon the recommendation of the graduate department/program, and with the agreement of the School of Graduate Studies, up to 50% of the course work requirement of a specific graduate degree program may consist of graduate course credits earned while a special student, provided that those graduate course credits have not been credited towards any other degree of any kind.

Visiting Graduate Student

a. **Ontario Visiting Graduate Student (OVGS) Plan**: This plan allows a graduate student of an Ontario university to take graduate courses at another Ontario university while remaining registered at the home university. The plan allows the student to bypass the usual application for admission procedures to the host university and facilitates transfer of course credits to the home university. The student pays fees to the home university and is classed as 'visiting graduate student' at the host

university. Normally, an administrative fee of $1100 for a term-length course, and $2200 for a full year course, will be assessed by the host university, to be paid by the home university.

The student must make application for study under this Plan by completion of a special application form which is available at departmental offices or from the School of Graduate Studies. Students may not audit courses under this plan nor enroll in any courses which are not to be credited towards their degree program. The student must be registered at Queen's as full-time off-campus.

b. **Queen's/Royal Military College Visiting Graduate Student Agreement**: Students from either university are permitted to take courses at the graduate level at the host university for degree credit at their home university. Courses may not be audited. Fees are paid at the home university.

c. **Reciprocal Exchange Student**: A student from a university with which Queen's has a formal reciprocal exchange agreement may register at Queen's for non degree study while remaining registered at the home university. Application is made to the University and upon the recommendation of the Graduate Department/Program, the student may be accepted by the School of Graduate Studies as a Reciprocal Exchange Student. The student is allowed to take graduate courses for a period up to one year, depending on the terms of the exchange agreement. The student pays fees at the home university.

d. **Visiting Research Student**: A student who is registered in a graduate level program at a home university may register at Queen's for non degree study to carry out research for their home degree thesis, or to join a research group. Upon the recommendation of a research supervisor and the Graduate Department/Program, such a student can be accepted by the School of Graduate Studies as a Visiting Research Student at Queen's University for a period up to one year. Visiting Research Students shall be assessed student activity fees.

International Visiting Research Students are also responsible for paying for the University Health Insurance Plan (UHIP), which is the mandatory health plan for all international students who will have an association with Queen's University for 3 weeks or longer. Any dependents accompanying the Visiting Research Student must also have UHIP coverage. UHIP is a primary insurance plan that provides basic medical coverage for most doctor and hospital services in Ontario. More information can be found here: http://quic.queensu.ca/incoming/uhip.asp.

STUDY STATUS

Full-Time

A full-time student is expected to engage in his/her studies on a full-time basis. It is expected that a full-time student will limit paid employment unrelated to the student's research to a total of ten hours per week (average); students wishing to exceed this level should consult their supervisor and graduate coordinator. A student who fails to meet program requirements or who fails to maintain progress consistent with full-time status may be required to withdraw from their program. Under no circumstances will a student be permitted to register as a full-time student while maintaining full-time employment (more than 30 hours a week) elsewhere. Full-time students employed as teaching assistants are limited to a maximum of ten hours a week (average) in this capacity. This is the total time spent by the student in this position and includes time spent on preparation, reading assignments, and marking tests and examinations. Full-time students are expected to maintain geographic availability to the university so that regular interaction can take place between the student and supervisor and the student can effectively use the resources available at Queen's. Clearly, implementation of this guideline must be sensitive to the context of electronic communication, but the central notion is that a full-time student is participating effectively in the academic life of the community.

a. Full-Time Off-Campus Status: Without forfeiting full-time status a graduate student may be absent from the university for the purposes of visiting libraries, undertaking field work or taking a course at another institution, provided that, if the period exceeds four weeks in any one term, written permission is obtained from the student's department/program and the School of Graduate Studies. Students request this status and receive permission for it by completing and submitting this form: Request for Full Time Study Off Campus.

b. Access to Funding: Full-time students are eligible for a wide range of internal and external scholarship, bursaries and awards including Queen's Graduate Awards (QGA), international tuition awards for international students (ITAs), and NSERC, SSHRC, CIHR and OGS graduate fellowships. Normally, teaching assistantship (TAs) and research assistantships (RAs) are limited to full-time students.

Part-Time

Students who are registered as part-time are expected to be pursuing their studies on a part-time basis and making commensurate progress. The number of terms of study for a given program is expected to be approximately twice as long as for a full-time student in a comparable program, but progress is expected to be continuous.

Part-time students may not gain financial advantage over full-time students with respect to the overall cost of fees for their program as a function of their part-time status.

Part-time students, normally, may not enroll in more than one half course (3.0 units) per term (excluding thesis registration). An exception to this condition is made when the normal full-time course load in the program is four or more courses per term, in which case a part-time student may take two half courses in a given term.

Students may be admitted as part-time as permitted by the School of Graduate Studies. For such permission to be granted, prior to or at the time of recommending admission, the department/program must submit a formal recommendation containing

1. an outline of a viable academic program
2. a statement of the minimum and maximum period of registration to be allowed, and
3. a statement of the proposed part-time status commitment.

This recommendation for part -time status must be approved before the student may be offered admission.

NOTE: The regulations above apply to any student who is admitted as a part- time student to what is normally a full -time graduate degree program. Part-time Master's degree programs, and/or professional part-time graduate programs (graduate diplomas and/or graduate certificate programs) normally have different regulations about course load and progression through the program.

Inactive

A graduate student may register as inactive if permitted by the School of Graduate Studies to discontinue studies temporarily for personal or other reasons. Permission may be granted only if, on return, the student will still be able to complete the degree program requirements within the allowed time (see Time Limits for Completion of Programs on the General Regulations page).

INACTIVE STATUS NOTES

1. An inactive student will not always be excused term fees. However, all students who are inactive due to maternity/parental leave, or medical leave will be excused term fees.
2. An inactive international student will pay the same fee as that required from a Canadian student. However, all students who are inactive due to maternity/parental leave, or medical leave will be excused term fees.
3. For conditions of Maternity/Parental leave, see Maternity and Parental Leave
4. For conditions of Medical Leave, see Medical Leave for Graduate Students.
5. A change of status to inactive may also impact repayment requirements of any student loan that the student currently receives or has ever received, including any provincial and/or federal student loans, or loans from any other student loan provider. It is the student's responsibility to be aware of how a status change to inactive impacts any student loan(s).

Transfers from Part-Time to Full-Time

Students who begin as part-time students may transfer to full-time status if this modified registration plan is approved as part of their program prior to being accepted (see section Part Time). Applications for transfer to full-time status would also be considered if the circumstances of the student which led to the original request for part-time enrolment have changed. However, subsequent return to part-time status would then be in the context of the guidelines set out in section Transfers from Full-time to Part-time Status.

Transfers from Full-Time to Part-Time

In general, students registered in full-time programs are expected to maintain full-time status throughout their programs. Requests for change of status from full-time to part-time must be approved both by the Department/Program and by the School of Graduate Studies; such requests normally will not be approved until after the student has completed the period of BIU eligibility (6 terms for Master's and 13 terms for Doctoral students).

No changes of registration status will be granted after the Ontario government enrolment count date for that term (1 November for the Fall Term, 1 February for the Winter term, 30 June for the Summer term).

Transfers from full-time to part-time status will be considered in the following circumstances:

a. When there has been a change in the student's personal circumstances which prevent her/his studies from being pursued on a full-time basis. This would include increases in family commitments for childcare, care of other dependents or changes in personal health.

b. An opportunity for full-time professional employment arises which would make it impossible for the student to maintain his/hers studies on a full-time basis.

c. If a student registers full-time in another degree program.

Students request this status and receive permission for it by completing and submitting this form: Request for Transfer to Part Time Status.

In order for the request to be considered, the request form must be accompanied by:

i. a statement by the student of the reasons for requesting the transfer and a plan of study setting out the steps to be taken and a timetable for completion;

ii a statement from the supervisor that the study plan and timetable are realistic.

Additional documentation is required to support a request to change to part time status in some cases. These requirements are stated on the form.

It is expected that the student applying for this transfer for reasons other than those set out in (a) above will have completed all data collection for the research and that the thesis is scheduled to be finished within one year of the time of transfer.

In cases of financial hardship after the period of BIU eligibility has expired, the taking up of full-time employment of a general nature may be considered provided that i) and ii) above are satisfied and completion is expected within one year of the time of transfer.

The registration of a student who has transferred to part-time status will be reviewed after one year; if the student has failed to make substantial progress during the year, he/she may be required to return to full-time status or to withdraw from the program.

NOTES

1. All Master's students registering initially in a full-time program as a full-time student must pay full-time fees at least for the first three terms, whatever their registration status.

2. All doctoral students registering initially in a full-time program as a full-time student must pay full-time fees at least for the first six terms, whatever their registration status.

Students who meet the conditions for part-time status will be charged the part-time fee, which is currently one-half of the full-time fee (however, note 1 and 2).

AWARDS AND FINANCIAL ASSISTANCE

All students accepted for full-time admission into full -time graduate programs are considered for limited funding from the department/program. In addition to department/program funding, there are some internal fellowships and scholarships available annually. Prospective or enrolled students do not make individual application for most internal fellowships or scholarships administered by the School of Graduate Studies. Departments/Programs are notified of all annual fellowship competitions, and nominate eligible students appropriately. Most of these fellowship allocation decisions are made in June.

In their own interests, applicants and continuing students must make early inquiry and annual application for fellowship support to all possible sources external to Queen's University, to ensure adequate financial assistance. Many external awards are restricted to Canadian citizens and landed immigrants who have held this status at least one year. Some Queen's University internal awards have similar restrictions. In particular, some internal fellowships, scholarships and awards are designated as "Ontario Student Opportunity Trust Funds (OSOTF)" OR "Ontario Trust for Student Support (OTSS) awards. These are awards that have resulted from the Ontario government's "matching" programs. Under the program, the Ontario government has matched every dollar of donation received for student assistance. There are two major conditions for all OSOTF/OTSS awards, scholarships and fellowships: recipients must be Ontario residents, and demonstrate financial need.

After ensuring that any applications for external awards have been made, Departments/Programs review the individual merits and circumstances of incoming and continuing students. They make recommendation to the Fellowship Committee of the School of Graduate Studies for Queen's internal scholarships and other merit awards and bursaries. Departments/Programs assist students, where possible, out of support funds at their own disposal.

Since students with physical or learning disabilities may require a longer period of time than usual to complete a program of graduate study, Departments/Programs may in duly attested cases, give special consideration to extending the normal period of support from Department/Program sources. They may also, in consultation with the Coordinator of Services for Special Needs and the Director of the Student Counselling Service, or the Director of Student Health Service, recommend to the Dean of the School

of Graduate Studies that such students be considered for additional support from Student Wellness Services.

Students registered as part-time in a graduate degree program to accommodate a documented permanent disability may be eligible for internal scholarships and awards when the terms of the awards permit this flexibility.

The School of Graduate Studies will extend the normal funding eligibility period for graduate students whose documented permanent disability impacts their academic progress such that more time to complete their degree is required; a request for such extension should normally be made within the first term of study. An extension provides students with the option of distributing the normal funding package over a longer period of time. The allocation of funding support beyond the funding eligible period will be considered on a case-by-case basis, based on the principle of individualized and particular accommodations and, if granted, will normally be limited to no more than one additional term for Master's students or one additional year for doctoral students.

Awards held by students who are required to withdraw or who withdraw voluntarily, or who become withdrawn due to failure to maintain registration, will be terminated, and students may be required to repay some or the entire award. In the case of some external granting bodies, refund of the award portion paid out is mandatory if the award holder withdraws from the graduate program. Partial or complete award repayment is also required if a student switches to part-time, or inactive, status.

EXTERNAL AWARDS OFFERED BY GOVERNMENTAL AND OTHER GRANTING BODIES

Federal and Provincial Government Awards

The Natural Sciences and Engineering Research Council (NSERC) Funding

NSERC is a federal funding and granting agency. The agency supports some 26,500 university students and postdoctoral fellows.
NSERC aims to make Canada a country of discoverers and innovators for the benefit of all Canadians. The agency supports university students in their advanced studies, promotes and supports discovery research, and fosters innovation by encouraging Canadian companies to participate and invest in postsecondary research projects.

NSERC researchers are on the vanguard of science, building on Canada's long tradition of scientific excellence.

Funding from NSERC for graduate level studies is possible through a number of annual competitions. Details can be found here:

http://www.nserc-crsng.gc.ca/Students-Etudiants/PG-CS/index_eng.asp

or by contacting NSERC:
NSERC
350 Albert Street
P.O. Box 1610
Ottawa, ON K1P 6G4
Canada
Phone: 613 995 5992
Fax: 613 992-5377
website: http://www.nserc.ca/

All information also available in French from the website. Information on the application processes, and the internal competition deadlines will be circulated to all graduate departments/programs each Fall term.

Ontario Graduate Scholarships (OGS)

The Ontario Ministry of Advanced Education and Skills Development will award up to 3,000 Ontario Graduate Scholarships (OGS) annually. The awards are tenable in all disciplines and the scholars must have a high level of academic achievement. The awards are intended primarily for Canadian citizens and for landed immigrants; however, a small number of awards may be made to student visa holders who are students at Queen's University during tenure of the OGS. The current value of the award is $5,000 per term. Awards will be for two or three consecutive terms; one-term awards will not be made. Information on the application process will be circulated to all graduate departments/programs each Fall term.

The Social Sciences and Humanities Research Council of Canada (SSHRC) Funding

The Social Sciences and Humanities Research Council of Canada (SSHRC) is the federal research funding agency that promotes and supports postsecondary-based research and training in the humanities and social sciences. By focusing on developing Talent, generating Insights and forging Connections across campuses and communities, SSHRC strategically supports world-leading initiatives that reflect a commitment to

ensuring a better future for Canada and the world.
Funding from SSHRC for graduate level studies is possible through a number of annual competitions. Details can be found here:

http://www.sshrc-crsh.gc.ca/home-accueil-eng.aspx#

or by contacting SSHRC:

350 Albert Street
P.O. Box 1610
Ottawa, ON K1P 6G4
Canada Phone: 613 992-0691 Fax: 613 992-1787

Website: http://www.sshrc.ca

All information also available in French from the website. Information on the application processes, and the internal competition deadlines will be circulated to all graduate departments/programs each Fall term.

Canadian Institutes of Health Research (CIHR) Funding

The Canadian Institutes of Health Research (CIHR) is Canada's federal funding agency for health research. Composed of 13 Institutes, CIHR provides leadership and support to more than 14,100 health researchers and trainees across Canada.

Funding from CIHR for graduate level studies is possible through a number of annual competitions. Details can be found here:

http://www.cihr-irsc.gc.ca/e/193.html

or by contacting CIHR:

Canadian Institutes of Health Research
160 Elgin Street, 9th Floor
Address Locator 4809A
Ottawa, ON, K1A 0W9
CANADA

General Inquiries: 613-941-2672
Toll Free: 1-888-603-4178
Fax: 613-954-1800

Grants & Awards Information: 613-954-1968
Toll Free: 1-888-603-4178 (press 1)
Email: support@cihr-irsc.gc.ca

All information also available in French from the website. Information on the application processes, and the internal competition deadlines will be circulated to all graduate departments/programs annually.

Canada Graduate Scholarships – Michael Smith Foreign Study Supplements Program

This foreign study supplements program is available to Canadian citizens or permanent residents who hold the SSHRC Joseph-Armand Bombardier, the NSERC Alexander Graham Bell, or the CIHR Frederick Banting and Charles Best Canada Graduate Scholarship (CGS) at the master's or doctoral level, or a Vanier CGS at the doctoral level.

Details can be found here: http://www.nserc-crsng.gc.ca/Students-Etudiants/PG-CS/CGSForeignStudy-BESCEtudeEtranger_eng.asp

or by contacting the applicable funding agency listed under Program Contacts on that website.

All information also available in French from the website. Information on the application processes, and the internal competition deadlines will be circulated to all eligible CGS holders whenever a competition is planned.

The Ontario Trillium Scholarships

In November 2010 the Government of Ontario announced the creation of the Ontario Trillium Scholarships (OTS) program, a significant initiative to attract more of the best qualified international students to Ontario for Ph.D. studies. Each OTS will be worth $40,000 annually to the recipient Ph.D. students, and is renewable for four years (subject to conditions). Any prospective international Ph.D. candidate, from any field, is eligible to be nominated (subject to conditions). Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition. Departments/Programs nominate new international Ph.D. students for this competition. Information on the application process, and the internal competition deadline will be circulated to all graduate departments/programs annually.

Other External Awards

American Association of University Women Fellowship

The American Association of University Women Educational Foundation awards International Fellowships for advanced study and training to women of outstanding ability who are citizens of countries other than the United States. There are no restrictions as to the age of the applicant or the field of study. Upon return to their own countries, fellowship recipients are expected to provide effective leadership in their fields. The Fellowships are awarded annually for one year of graduate study or advanced research at an approved institution in the United States. Application deadline 1 December annually for the upcoming fellowship year. For details see:

http://www.aauw.org/what-we-do/educational-funding-and-awards/

Website: http://www.aauw.org/

Canadian College of Health Leaders Eastern Ontario Chapter Award of Excellence

The purpose of this Award is to recognize significant and exemplary efforts of students while completing their formal educational programs. The recipient will receive a Certificate of Citation together with a cheque for $1000. To qualify, submissions considered for the award will address a formal activity/project undertaken by students which advance or have the potential to: advance health care management in an applied context, make a substantive contribution to current or evolving health care policy interpretation/development, and/or give evidence of lessons learned/compelling case studies relevant to an applied health care system/leadership issue.

All applicants for the Award of Excellence must be enrolled in the MPA at Queens University or have successfully completed the requirements for graduation within the previous six months. All submissions for the Award must be based on a project completed during the current academic year. Submissions must be received by the Award of Excellence Coordinator by April 30. For more information, please contact: Elizabeth Bardon, CHE Tel: (613) 544-3400 x2656; Email: bardone@hdh.kari.net

Canadian Federation of University Women Fellowships

Each year, the Canadian Federation of University Women (CFUW) provides a range of awards and fellowships to women through its charitable trust program to encourage the development of high quality scholarship.

CFUW Fellowships and Awards Program is an affirmative action program as provided for in the Constitution of Canada. Eligibility for these fellowships and awards is restricted to women. DEADLINE FOR APPLICATIONS: NOVEMBER 1

Direct questions to:
CFUW Fellowships Program Manager
331 Cooper Street, Suite 502
Ottawa, Ontario, K2P 0G5
Toll-free in Canada & the US: 1-888-220-9606; Phone: 613-234-8252 ext. 104
Email: fellowships@cfuw.org; cfuwfls@rogers.com
Website: http://www.cfuw.org/en-ca/fellowshipsawards.aspx

Canadian Northern Studies Trust Graduate Scholarships

For over thirty years the Association of Canadian Universities for Northern Studies (ACUNS) has successfully promoted the advancement of northern scholarship through its mandate and programs. Established in 1978, ACUNS is a registered charitable organization operating with an office in Ottawa, and active volunteer representatives at over 40 member institutions across the country.

The Canadian Northern Studies Trust (CNST) is ACUNS scholarship awards program. It was established in 1982 to further the Association's mandate to advance knowledge and understanding of Canada's North by offering student awards for exceptional northern-based research. The purpose of the CNST is to foster scholars and scientists with northern experience and at the same time to enhance educational opportunities available for northern residents to obtain post-secondary education at Canadian colleges and universities.

Application deadline: last business day in January.

Scholarship and Contact Information is available from this website:
http://acuns.ca/students-post-docs/apply/

The International Council for Canadian Studies Scholarships

The International Council for Canadian Studies (ICCS), founded in 1981, is a not-for-profit organization composed of twenty-two member associations and five associate members in thirty-nine countries, dedicated to the promotion and support of research, education and publication in all fields of Canadian Studies around the world.

Information about ICCS scholarships can be found here: http://www.iccs-ciec.ca/graduate-student-scholarships.php

International Council for Canadian Studies
250 City Centre Avenue, Suite 303
Ottawa, Ontario
K1R 6K7 Canada
Telephone: 613-789-7834
Fax: 613-789-7830
Email: info@iccs-ciec.ca

Frank Knox Memorial Fellowship

This award is provided by the bequest of Mrs. Frank Knox to enable students from Canada to study for an academic year at Harvard University. Up to three fellowships are available. Knox Fellowship pays full Harvard tuition and mandatory health insurance fees and provides a stipend sufficient to cover the living expenses of a single Fellow for a 10-month academic year. Open to Canadian citizens or permanent residents of Canada who have graduated or who are about to graduate from a recognized university or college in Canada. No application will be considered from a student already studying in the United States. Other restrictions apply.
For more information and the application form: Please visit Harvard University's website https://frankknox.harvard.edu/ or contact Universities Canada: awards@univcan.ca.

Governor General's Academic Gold Medals

The Governor General's Academic Gold Medals are awarded annually to two graduate students who achieve the highest academic standing in their graduate degree program. These medals will be awarded to graduating Master's and Doctoral students in any field. Information is sent to all graduate Departments/Programs in March regarding the annual competition to select the medallists.

Imperial Order of the Daughters of the Empire Doctoral Awards

These memorial awards perpetuate the memory of those who gave their lives in World Wars I and II. Applicants must be Canadian citizens and in at least the second year of their doctoral program. Scholarships valued at $15,000 are awarded to students attending Canadian or Commonwealth universities. More details and application forms may be obtained from the IODE's website, http://www.iode.ca/.

J. H. Stewart Reid Memorial Fellowship

Value $5,000 One fellowship is offered for Doctoral studies in any field, to honour the memory of the first Executive Secretary of the Canadian Association of University Teachers. Applicants must be Canadian citizens or permanent residents of Canada. Applications are made online at: http://stewartreid.caut.ca/English/default.htm Deadline 30 March. More information is available from the Awards Officer, Canadian Association of University Teachers, 2675 Queensview Drive, Ottawa, Ontario K2B 8K2. Email: stewartreid@caut.ca

The Mackenzie King Open Scholarship

Value up to $7,500 In the will of the late Right Honourable William Lyon Mackenzie King, provision is made for the award of a one-year scholarship of up to $7,500. The scholarship is open to a graduate of any Canadian university, and provides for full-time graduate study in any field in any university in Canada or elsewhere. Application deadline 1 February. Information on the application process, and the internal competition deadline will be circulated to all relevant departments/programs annually.

The Mackenzie King Travelling Scholarships

Value up to $10,000 In the will of the late Right Honourable William Lyon Mackenzie King, provision was made for four scholarships of up to $10,000 each. The Scholarships are open, on application, to graduates of any Canadian university who propose to engage, either in the United States or the United Kingdom, in postgraduate studies in the field of International or Industrial Relations (including the international or industrial aspects of Law, History, Politics, Economics). Applicants should be persons of unusual worth and promise; awards will be determined on the basis of academic achievement, personal qualities and demonstrated aptitudes. Consideration will also be given to the applicant's proposed program of postgraduate study. Application deadline 1 February. Information on the application process, and the internal competition deadline will be circulated to all relevant departments/programs annually.

The Rhodes Scholarship

The Rhodes Scholarships are considered the oldest and most prestigious international scholarships for outstanding scholars from any academic field of study. Funded by the estate of Cecil J. Rhodes (the Rhodes Trusts), the Rhodes Scholarships support students who demonstrate a strong propensity to emerge as 'leaders for the world's future'. Rhodes Scholarships are tenable for postgraduate studies or a second bachelor's degree

at Oxford University, for two years with the possible extension of a third year. A full statement of requirements and conditions is outlined on the internal application form which may be obtained from the Office of the Vice-Provost and Dean of Student Affairs. Completed application forms and supplementary documents must be submitted by early September each year.
Website: http://www.queensu.ca/studentaffairs/funding-and-awards/rhodes-scholarship

The Trudeau Foundation Scholars Programme

The Trudeau Foundation Scholars Programme will grant up to fifteen new scholarships every year to outstanding doctoral candidates in the humanities and social sciences. Trudeau Scholars are selected through a process that involves nomination by a university, an application supported by references and transcripts, internal and external review and selection panels, an interview, and the approval of the Board of Directors. The Trudeau Foundation Doctoral Scholarship is tenable for three years. During their third year, Trudeau Scholars may apply for a thesis writing scholarship or a postdoctoral scholarship, for a fourth year of financing. The Trudeau Foundation Doctoral Scholarship consists of two distinct financial categories:
(1) an annual stipend of $40,000, which is intended to cover the cost of tuition and reasonable living expenses. If a Trudeau Scholar concurrently holds other scholarships or fellowships that allow for the accumulation of awards, and if the total value of those external awards exceeds $10,000, the Foundation will subtract the amount over $10,000 from the $40,000 annual stipend.
(2) an annual travel allowance of $20,000, which is available to support research-related travel and to cover networking expenses associated with the Foundation's Public Interaction program.

Far beyond a financial assistance, the Trudeau Foundation Doctoral Scholarship offers award winners the opportunity to interact with an exciting community of leaders and committed individuals in every field of the social sciences and humanities. Trudeau Scholars will be required to spend a portion of their time during the tenure of their award at an institution or fieldwork location away from their home university, and outside the province in which that university is located. Other restrictions apply. Complete information and application forms may be obtained from the website:
http://www.trudeaufoundation.ca/welcome
All information is also available in French (and other languages) on the website. Information on the application process, and the internal competition deadline will be circulated to all graduate departments/programs in the Fall term.

Canadian Commonwealth Scholarship Programme

The Government of Canada offers scholarships as part of the Commonwealth Scholarship Plan (CSP). These scholarships are tenable at recognized public Canadian institutions and affiliated research institutes only. These scholarships are designed to provide opportunities for students of other Commonwealth countries to pursue research and studies in Canada. The Canadian Commonwealth Scholarship Program is funded by Global Affairs Canada which also determines the number of scholarships available each year. The agency responsible for financial and administrative matters is the Canadian Bureau for International Education (CBIE).
Complete details, deadlines and application instructions are available here:
http://www.scholarships-bourses.gc.ca/scholarships-bourses/index.aspx/GSEP-en.html
All materials also available in French on the website.

QUEEN'S UNIVERSITY MINIMUM FUNDING GUARANTEE FOR ELIGIBLE DOCTORAL STUDENTS

Queen's University provides a minimum funding guarantee currently valued at $18,000 per year, for eligible doctoral students. This amount is a minimum, and actual doctoral student support may be substantially higher in many cases, depending on the program of study.

Eligibility Requirements

1. The guaranteed minimum will apply to all full time doctoral students registered in years 1 – 4 (i.e. new and continuing students) of their programs.
2. Eligible doctoral students must maintain good academic standing in order to qualify.
3. Eligible doctoral students must be qualified to receive the usual sources offered by their home department as part of a funding package. This implies that, particularly in the case of a TA position, the student must be in residence for enough of the full academic year in order to be reasonably available for employment. In addition, students must apply for all major external and internal (where appropriate) scholarships for which they are eligible in order to qualify for the minimum guarantee.

Students must have requested financial support upon their initial application for admission to a Queen's doctoral program in order to be eligible. It is assumed that the

information provided in terms of a *Yes* or *No* in response to the query 'Do you require financial support from Queen's University' applies throughout the student's academic program.

QUEEN'S UNIVERSITY INTERNAL FELLOWSHIPS, SCHOLARSHIPS, AND OTHER AWARDS

Fellowships

These merit fellowships, established by benefactors of Queen's University, make an important contribution to the support of graduate students.

For most of the fellowships listed here, the Fellowship Committee of the School of Graduate Studies adjudicates nominations from departments/programs through an annual competition.

The departments/programs concerned administer some of the fellowships which apply to particular fields of study.

For all fellowships listed here, consideration is given to students who have high academic qualifications.

All applications for admission submitted before 1 March are considered for these awards.

The Alfred Bader Graduate Fellowship
Value: $7,000 approx.
Established in May 2014 by Dr. Alfred Bader and awarded on the basis of academic excellence to a funding-eligible Ph.D. level student enrolled in a graduate program in Arts and Science in the School of Graduate Studies, to undertake studies in history related to 20th century Europe. Preference will be given to students whose research is related to Germany, 1933-1945. A one page research proposal will be required as part of the application process. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition.

The Alfred Bader Graduate Fellowship in the Humanities
Value: $7,000 approx.
Established in May 2014 by Dr. Alfred Bader and awarded on the basis of academic excellence to funding-eligible Ph.D. level students enrolled in a graduate program in the Humanities in the School of Graduate Studies. Preference will be given to incoming

Ph.D. students in a graduate program in the Humanities. Consideration will be given to newly admitted doctoral students in other graduate programs in the Faculty of Arts and Science whose planned research falls under the general category of 'the Humanities'. A one page research proposal will be required as part of the application process. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition.

The E. G. Bauman Fellowship
Value: $15,000
Awarded to doctoral students in the departments of Biology, Economics, English Mathematics and Statistics and the Biochemistry and Cell Biology field of the Biomedical and Molecular Sciences graduate program. Candidates must be registered in the first or second year of a doctoral program and students may receive the award for two years. Candidates for the awards must show exceptional promise for making significant contributions to the study of biochemistry and cell biology, economic theory and/or econometrics, English language and literature or mathematics.

The Bert Wasmund Scholarship for Sustainable Energy Research
Current Value: variable, approximately $10,000 per year per student to be disbursed to 2 students.
Established in November 2006 by Dr. Bert Wasmund, B.Sc. 1961; M.Sc. 1963; Ph.D. 1966 (U of T), and Dr. Eric Wasmund, B.Sc. 1988; Ph.D. 2005 (McMaster) and awarded to an eligible graduate student in a Master's or Doctoral research degree program in Engineering and Applied Sciences in the School of Graduate Studies at Queen's University whose stated research area is studying sustainable energy research. Preference will be given to candidates who are engineering graduates from a Canadian University included in the Association of Universities and Colleges of Canada. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition. Selection will be based on academic achievement and a demonstrated commitment to the development of sustainable energy technologies.

The Geoffrey and Shelagh Ballard Award for Sustainable Energy Engineering
Value: variable.
Established in October 2013 by Shelagh Ballard, B.A. 1956, and awarded on the basis of academic excellence to funding-eligible Master of Applied Science (M.A.Sc.) or Ph.D. level students who are Canadian citizens or Permanent Residents enrolled in Engineering and Applied Science in the School of Graduate Studies. Applicants must have a demonstrated research interest in the area of sustainable engineering, with a focus on energy, where the goal is to help society move from a gasoline based economy

to a hydrogen based economy, through the innovative application of science and engineering. A one page research summary must be provided as part of the application process. Selection will be made by the Fellowships Committee of the School of Graduate Studies through the annual internal fellowship competition.

The Huntley Macdonald Sinclair Tuition Fellowships
Value: variable, normally be equal to the difference between International student and Canadian student tuition fees.
Established by Mr. Huntley M. Sinclair, B. Comm. 1924, to assist students from countries other than Canada to undertake a graduate degree program. Two or more fellowship are awarded annually on the basis of need by the Fellowship Committee of the School of Graduate Studies. The value of the fellowships will normally be equal to the difference between International student and Canadian student fees.

The Kevin Armstrong Memorial Award
Value: variable
Established in April 2007 by Alan and Ursula Armstrong in memory of their son, Kevin A. Armstrong, M.A. (Philosophy) 1999, and awarded to a graduate student in the first year of any graduate program, with preference given to a student in the Master's program in the Department of Philosophy. Selection will be based on academic achievement.

The G.E. Ted Courtnage Graduate Award in Engineering
Value: variable
Established in October 2006 by Dorothy Courtnage in memory of her husband G.E. Ted Courtnage, B.Sc. 1956, and awarded on the basis of academic achievement to full time funding eligible graduate students in any year of study, in Engineering and Applied Science in the School of Graduate Studies.

The Morgan Brown Scholarships
Value: $10,000
Established from the estate of Mr. Morgan Brown, B. Comm. 1930. Awarded to master's or doctoral students who have first-class standing. Preference will be given to students in the social sciences, and the financial needs of students will be considered.

The D. W. Stewart Graduate Fellowship
Value: $10,000
Awarded to support study in the humanities; open to candidates for both the master's and the doctoral degrees.

The Duncan and Urlla Carmichael Fellowships
Value: $10,000
Established from the estate of Urlla Eillene Carmichael. Awarded to master's and doctoral students in any field who have first class standing.

The Franklin and Helene Bracken Fellowship
Value: $10,000
Awarded to Ontario graduate students who have demonstrated outstanding academic achievement and leadership ability. These awards are intended primarily for the encouragement of new graduate students, although second and third year doctoral students will be eligible for subsequent awards, provided that their graduate work continues to be of the highest quality.

The Franklin Bracken Fellowships
Value: $10,000
Awarded to master's and doctoral students in Health Sciences. Candidates for the award must have a first class standing.

The Louisa A. Fowler Graduate Fellowship
Value: $10,000
Awarded to a full-time Ph.D. student in any field who has first-class standing and who has completed or is completing one full academic year of graduate work.

The R. Samuel McLaughlin Fellowships
Value: $10,000
Awarded to first class master's and doctoral students in all fields who are residents of Ontario.

The Reuben Wells Leonard Resident Fellowship
Value: variable
Provided for under the will of the late Reuben Wells Leonard. Awarded in any field to a graduate of Queen's University who plans to carry on studies and research for a twelve-month period at Queen's University.

The Arts '49 Principal Wallace Fellowship
Value: variable
Established in January 2001 by Arts '49 in memory of Dr. Robert Charles Wallace, Principal of Queen's University from 1936-1951. Awarded by the Fellowship Committee of the School of Graduate Studies to a deserving student in a graduate program in

departments in the Faculty of Arts and Science, or the School of Urban and Regional Planning, or the School of Policy Studies.

The Robert Charles Wallace Graduate Award
Value: variable
Established by donations from Mr. Fred Moote, B.A. 1949, and admirers of Principal Wallace. This award will go to a first-class master's or doctoral student in any field, accepted into or enrolled in a graduate program in the Faculty of Arts and Science, or School of Urban and Regional Planning, or School of Policy Studies.

The Senator Frank Carrel Fellowships
Value: $10,000
Established by the late Senator Frank Carrel of the City of Quebec. Fellowships will be awarded for general proficiency to Canadian students enrolled in the School of Graduate Studies and Research who for at least one year prior to their application to Queen's (or for at least one year prior to 30 April if enrolled in an upper year) and until the expiry of their fellowship have been and remain domiciled in the Province of Quebec and as far as possible in the City and County of Quebec or in the Gulf Division of the Legislative Council of Quebec as constituted at 30 July 1940.

The Trevor C. Holland Fellowships
Value: $10,000
Established from the estate of Trevor C. Holland. Awarded to master's or doctoral students in any field who have first-class standing and who are Canadian citizens or landed immigrants.

The Martin Schiralli Fellowship
Value: variable
Established from the estate of Martin Schiralli, who was an active and well-regarded member of the Faculty of Education. Awarded annually on the basis of financial need and academic excellence to eligible graduate students with a preference given to doctoral students in Education.

The Grace L. Boileau Graduate Award
Value: variable
Established by a bequest from the estate of Grace L. Boileau, B.A. 1941, and awarded on the basis of financial need and academic achievement to full-time funding-eligible graduate students in any year of a masters or doctoral program at Queen’s University.

The Michael Durland Graduate Fellowship
Value: variable
Established by Dr. Michael Durland, Ph.D. '91, and awarded on the basis of financial need and academic achievement to a full-time funding-eligible graduate student in any master's or doctoral program at Queen's University. Preference will be given to graduate students studying Finance in the Smith School of Business.

The Seanix Graduate Award

Value: variable
Established by Paul Girard (BA '1987) for Seanix and awarded on the basis of financial need and academic achievement to full-time funding-eligible graduate students. Preference will be given to graduate students in the area of Mechanical and Materials Engineering in Engineering and Applied Science in the School of Graduate Studies.

The William C. Leggett Graduate Fellowship

Value: variable
Established in October 2004 by the Board of Trustees of Queen's University, faculty, staff, family and friends in recognition of Dr. William C. Leggett's ten years as Principal and Vice-Chancellor at Queen's University. Awarded on the basis of academic achievement to a full-time funding eligible graduate student with a preference for those enrolled in a doctoral program in English, History, Philosophy or Cultural Studies at Queen's University.

The Herman K. Walter Graduate Award
Value: variable
Established by Herman K. Walter, B.Sc.(Eng.) 1945 and awarded on the basis of financial need and academic achievement to a full-time funding eligible graduate student in any graduate program with a preference for those enrolled in a graduate program in Engineering and Applied Science.

The Douglas Sheppard Wilson Fellowship
Value: variable
Established by a bequest from the estate of Douglas Sheppard Wilson for postgraduate studies in film. Open to full -time first-class candidates for both the master's and doctoral degrees for one year of study and research.

The Norman D. Wilson Fellowship
Value: variable
Established by a bequest from the estate of Douglas Sheppard Wilson for postgraduate studies in urban transportation and economics. Open to full- time, first-class candidates for both the master's and doctoral degrees for one year of study and research.

The Norma Nugent Graduate Award
Value: variable
Named in honour of Norma Nugent, a dear friend, invaluable colleague and dedicated employee of the School of Graduate Studies and Research, who died in May 2002. Established in October 2005 by a Queen's engineering graduate who chooses to remain anonymous, and awarded to full-time funding eligible graduate students. Preference will be given to graduate students in Engineering and Applied Science in the School of Graduate Studies.

The Irene MacRae Memorial Graduate Award
Value: variable
Established in October 2005 by her children, grandchildren and great-grandchildren in memory of Irene MacAllister MacRae, Arts '14, who was vice-president of the Mathematics Club while at Queen's and was one of the first female graduates in Mathematics and Statistics at Queen's University. Awarded on the basis of academic achievement to eligible graduate students in the Physical Sciences, with preference given to female students in Mathematics and Statistics.

The Dr. Robert John Wilson Fellowships
Value: $10,000
Established by the Estate of Kathryn Anna Wilson in memory of her husband, Dr. Robert John Wilson, Meds. 1941. Awarded to funding eligible doctoral students registered in health sciences related disciplines at Queen's University. Candidates for the awards must show exceptional promise for making significant contributions to studies or research in health sciences.

The TD Bank Financial Group Graduate Fellowship in Arctic Environmental Issues
Value: variable.
Established in March 2009 by TD Bank Financial Group and awarded to funding eligible Master's or PhD level students pursuing research work in environmental issues that are of practical relevance to the Arctic region. The fellowship will provide travel and stipend support for graduate students to continue critical field research within the Arctic. Selection will be made by the Fellowship Committee of the School of Graduate

Studies through the annual internal fellowship competition. A one-page research summary must be submitted with the application materials.

The Nancy Simpson Scholarship in Genetics
Value: variable
Established in November 2004 by Nancy Simpson to recognize the best Masters or Ph.D. student at Queen's University studying in a field of genetics. Open to Master's and Doctoral students registered in the School of Graduate Studies in any graduate program or department at Queen's University whose research is in a field of genetics, including but not limited to molecular genetics, ethics in genetics, bioinformatics, behavioural genetics, evolutionary genetics and genomics. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition.

The U.S. Steel Canada Graduate Fellowship
Value: $10,000
Established by U. S. Steel Canada and awarded on the basis of academic excellence to funding-eligible Master's or PhD level students enrolled in the School of Graduate Studies in the area of mechanical and materials engineering with a specialization related to steel. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition.

The Dorrance Family Award
Value: $5,000
Awarded on the basis of excellence in scholarship and/or research, to a full time funding-eligible graduate student enrolled in a graduate program in an area in Science and Technology with preference given to Mathematics and Statistics. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition.

The Ian M. Drum Scholarship
Value: variable
Founded by Ian M. Drum, Science '37, and awarded on the basis of academic excellence to funding-eligible Master's or Ph.D. level students enrolled in Engineering and Applied Science in the School of Graduate Studies who have a demonstrated interest in a project with potential for commercial applications. Preference will be given to students who have taken some courses in either the humanities, social sciences, law or business as part of their postsecondary education at the time of application or who are enrolled in a program where innovation and commercialization are key aspects of the

curriculum. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition.

The Margaret Anderson Graduate Scholarship
Value: variable
Established in December 2016 by the estate of Margaret Anderson, B.A. (Hons) 1957, and awarded on the basis of academic excellence to funding-eligible Master's or Ph.D. level students enrolled in the School of Graduate Studies. Selection will be made by the Fellowships Committee of the School of Graduate Studies through the annual internal fellowship competition.

The George W. Bracken Memorial Scholarship
Value: variable
Established in June 2017 in memory of George W. Bracken, B.Sc. (Eng) 1956, by his wife Margaret Bracken, B.A. (Hons) 1997 and family. Awarded on the basis of academic excellence to funding-eligible Master's or Ph.D. level students enrolled in the School of Graduate Studies who are pursuing field research at the Queen's University Biological Station. Selection will be made by the Fellowships Committee of the School of Graduate Studies through the annual internal fellowship competition.

Other Scholarships and Awards

The Arthur B. McDonald Prize for Academic Excellence
The Arthur B. McDonald Prize for Academic Excellence was established by Queen's University to honour Professor Emeritus Arthur McDonald (Physics, Engineering Physics and Astronomy), co-winner of the 2015 Nobel Prize in Physics. Established in May 2017 and awarded on the basis of academic excellence to incoming graduate students. Selection will be made by the Graduate Councils' Awards subcommittees of the Fellowship Committee of the School of Graduate Studies, in conjunction with the adjudication of the annual tri-council (SSHRC, NSERC and CIHR) scholarship competitions (Vanier competition excluded). This is a one year, non-renewable award. Value: $15,000 for Master's students, $30,000 for Doctoral students. The Arthur B. McDonald Prize for Academic Excellence cannot be held in conjunction with any scholarship, fellowship or award equal to or greater than $15,000, and cannot be held at the same time as a scholarship from NSERC, CIHR or SSHRC (the federal funding agencies).

The Robert Sutherland Fellowships
The Robert Sutherland Fellowships (formerly known as Graduate Dean's Scholarships for Aboriginal and Canadian Visible Minority Students) were established in 1992 to help diversify our campus by attracting applications from visible minorities that are under-represented at Queen's. Awards are available to incoming Aboriginal students, African Canadian students and other Canadian visible minority students. The awards will be made through a competition held each year in May-June. Application must be made when a student applies for graduate study at Queen's. Value $15,000

The Graduate Dean's Travel Grant for Doctoral Field Research
The Graduate Dean's Travel Grant for Doctoral Field Research provides financial support for doctoral students pursuing dissertation research at a considerable distance from Queen's. Awards will be made through a competition. The maximum value of the award is $3,000. Graduate programs and Departments are sent details and application materials approximately 8 weeks prior to the annual competition deadline.

Huntley Macdonald Sinclair Travelling Scholarship
The Huntley Macdonald Sinclair Travelling Scholarship provides financial support for doctoral students pursuing dissertation research abroad. Awards will be made on a competition basis annually. Applicants should provide an outline of their dissertation research, a description of the work to be undertaken abroad, and an estimate of the costs. The recipient will be chosen through the adjudication process of the Graduate Dean's Travel Grant for Doctoral Field Research competition. Value variable

The Alfred Bader Fellowship in Memory of Jean Royce
Established in November 2003 by Alfred Bader, Sc '45, Arts '46, M.Sc. '47, LLD '86, and other friends, in memory of Jean I. Royce, B.A. 1930, LL.D. 1968, Registrar, Queen's University, and awarded to a woman graduate of Queen's University for one year of study and research or to pursue an endeavour which contributes to the advancement of knowledge, contributes to society, or allows creative expression. All requirements for a Queen's degree must be completed by the spring convocation in the year of the competition. Application, along with official transcript(s), and three letters of reference, should be submitted to the Associate University Registrar (Students Awards) before 15 February.

The Jean Royce Fellowship
This fellowship in memory of Jean I. Royce, B.A. 1930, LL.D. 1968, Registrar, Queen's University, is awarded annually by the Queen's University Alumnae Association to a woman graduate of Queen's University for one year of study and research. Value

Variable. Applications should be submitted to the Associate Registrar (Student Awards) before 15 February.

The Marty Memorial Scholarship
The scholarship was established in memory of Dr. Aletta Marty, M.A. 1894, LL.D. 1919 and her sister, Sophie Marty, a distinguished graduate of Queen's University. Awarded annually by the Queen's University Alumnae Association to a woman graduate of Queen's University, for one year of study and research. Value Variable Applications should be submitted to the Associate Registrar (Student Awards) before 15 February.

Canadian Friends of the Hebrew University of Jerusalem Award
Established by the Canadian Friends of the Hebrew University (CFHU) and awarded on the basis of financial need to undergraduate and graduate students who have been accepted during the fall, winter or spring/summer session at the Hebrew University of Jerusalem for courses recognized for credit at Queen's University. Students may participate in courses offered at the Rothberg International School, the regular Hebrew University curriculum, other accredited Hebrew University programs, or any accredited study abroad program between Queen's University and the Hebrew University of Jerusalem. Application should be made to the Associate University Registrar (Student Awards) by 31 March.

The Mireille Calle-Gruber International Studies Award
Established by Mireille Calle-Gruber and annually awarded, on the basis of academic merit, to a student doing a Master or PhD program in the Humanities, who wishes to study in France. Departments may send a written statement of nomination to the School of Graduate Studies, by the deadline of March 1. An ad hoc committee of the School of Graduate Studies will review the statements of nominations and select the winner. Alternatively and when such applicants are identified, the recipient could be chosen through the adjudication process of the Graduate Dean's Travel Grant for Doctoral Field Research. If candidates for the award are identified through the latter process, the award will go to the applicant with the highest overall score in that competition. Value: variable

The Ted Reeve Memorial Award
Established by friends and associates of Ted Reeve, who was a football coach and a long time friend of Queen's. Awarded to upper-year students to recognize outstanding academic achievement and demonstrated qualities of courage, team loyalty and fair play on an intercollegiate team. Preference will be given to students who play on the Queen's Golden Gaels Football team. The maximum amount of each award will be according to O.U.A. regulations and will adhere to all other O.U.A. and C.I.S.

regulations for Athletics Awards. The recipients will be chosen by a Selection Committee, including representatives of former Queen's football players and two representatives appointed by the Senate Committee on Scholarships and Student Aid. Application should be made by 1 October to the Associate University Registrar (Student Awards). The application will be by letter and accompanied by a resume and two letters of reference, one of which will be from the applicant's interuniversity coaching staff.

The Rector Norman McLeod Rogers Prize

Established in memory of Norman Rogers (1894-1940), who held the Chair of Politics at Queen's from 1929 to 1935. Combining academic distinction with a commitment to public life, Mr. Rogers was elected M.P. for Kingston in 1935 and served subsequently as Minister of Labour. At the time of his death he was Canada's Minister of National Defence. Among his many accomplishments and honours, Mr. Rogers was selected as a Rhodes Scholar for Nova Scotia and from 1938 was Rector of Queen's. The prize is awarded to a graduating undergraduate or graduate student in the Departments of Political Studies, Economics, History, or the Public Administration program in the School of Policy Studies, who intends after completion of his or her studies to enter politics or the public service. A letter of application, with a current transcript and resume, should be submitted to the Associate University Registrar (Student Awards) by 1 February; no other material will be considered by the committee. Selection will be made by a committee chaired by the Head of Political Studies, and comprising the Heads of Economics and History, the Director of the School of Policy Studies and a representative of the Senate Committee on Scholarships and Student Aid, or their delegates. The three top-ranked candidates will be interviewed by the Committee. Candidates interviewed should expect the focus of the interview will relate, directly or indirectly, to topics associated to the candidate's interest in public service and/or public policy issues.

The Alexander and Ian Vorres Hellenic Travel Fellowship

Established by Ian Vorres, B.A. '50, and awarded to an upper year undergraduate or a graduate student, on the basis of financial need, academic achievement, and a written proposal, who is intending: 1) to pursue original work (a thesis or other project) in Greece for one year or two consecutive years on a subject related to Greece of any historical period, in philology, archaeology, history, or philosophy; or 2) to participate in a summer session or excavation in Greece sponsored by the Canadian Archaeological Institute in Athens, The American School of Classical Studies at Athens, or other approved institutions; or 3) to attend a full year program at The American School of Classical Studies at Athens, The College Year in Athens, or other approved institution. (These alternatives are listed in order of priority.) Applicants should complete a bursary application form available from the department, submit a letter of application with C.V.

and project description, along with the names of two referees to the Department of Classics. Selection will be made in consultation with the Student Awards Office. Application deadline: March 31 Value: variable

The Department of Classics Travel Grant
Established in January 2010 by the friends of the Department of Classics. Granted to graduate students or undergraduates registered in the Department of Classics. The grant is available to contribute to the support of field research that must be carried out at a considerable distance from Queen's University. Granted on the basis of the academic merit and feasibility of the proposed field study research described within the Department of Classics Travel Grant application. Selection will be made by the Department of Classics Awards Committee. Value: variable.

The International Student Tuition Award
Awarded to an international graduate student enrolled in any Master's research-based or Doctoral program in the School of Graduate Studies. The recipient must be enrolled full time in year 1 or 2 of an eligible Master's program or full time in years 1 through 4 of a Doctoral program and must also hold an International Tuition Award (ITA) from the School of Graduate Studies. Selection will be determined by an ad hoc committee appointed by the Vice-Provost and Dean, School of Graduate Studies. Value: variable (amount to be applied directly towards tuition fees).

Bursaries

AMS Sesquicentennial Bursaries
Value: variable
Established in 1990 by the Alma Mater Society of Queen's University. Awarded to students in any faculty or school with preference given to single parents with day care expenses. Application should be made to the Associate Registrar (Student Awards) by 1 December.

The Award for Graduate Students with Disabilities
Value: variable
Established by the Graduate Student Society (now called the Society for Graduate and Professional Students) from donations over a five year period (1989/90 to 1993/94) and awarded on the recommendation of the Disabilities Services Advisor, Queen's University.

The Adelaide Haggart Bursaries
Value: variable

Established from a bequest by Adelaide E. (Haggart) Robinson and awarded to a student in any faculty or school on the basis of financial need.
Application should be made to the Associate Registrar (Student Awards) by 1 December.

The Disabled Students' Bursaries
Value: variable
Established by the Alma Mater Society and Arts and Science '82 to assist disabled students attending Queen's University. Awarded on the basis of need.
Application should be made to the Associate Registrar (Student Awards) prior to 1 December.

The Inuit Bursary
Value: $200
Awarded to an Inuit student in financial need. Applications to be made to the Associate Registrar (Student Awards) by 1 December.

The Dr. John Freeman Bursary in Education
Value: variable
Established in June 2018 by John I. Freeman in memory of his son, Dr. John G. Freeman, B.A. 1976, B.Ed. 1977, M.A. 1990, a dedicated teacher and mentor of many graduate students during his 20 year career in the Faculty of Education at Queen’s University. Awarded on the basis of demonstrated financial need to students enrolled in a Masters or Doctoral degree program in the Faculty of Education. Applications are to be made to the Office of the University Registrar, Student Awards by 31 October.

The Norman L. Bowen Bursary
Value: variable
This bursary was established by Mrs. Mary Lamont Bowen and her daughter, Mrs. Catherine B. Orne, in memory of Dr. Norman L. Bowen, world renowned petrologist, a graduate and one-time professor in mineralogy at Queen's University. Awarded annually in the Department of Geological Sciences and Geological Engineering to a student of mineralogy and petrology, preferably one who has completed one year of graduate study at Queen's University.

The Phyllis Mary Robinson Bursary
Value: variable
Established in February 2018 by Joy Patrick, BNSc 1970, in memory of Phyllis Mary Robinson, dedicated teacher of nursing students for many years. Awarded on the basis of demonstrated financial need to undergraduate or graduate students in any year of a

degree program in the School of Nursing in the Faculty of Health Sciences. Applications are to be made to the Office of the University Registrar, Student Awards by 31 October.

The Rehab Therapy Society Sesquicentennial Bursary
Value: variable
Established by the Rehab Therapy Society in 1990, in celebration of Queen's Sesquicentennial. The bursary is awarded on the basis of financial need to undergraduate and/or graduate students in any faculty who are challenged with a physical disability. Application to be made to the Associate Registrar (Student Awards) by 1 December.

The Richard J. Hand Graduate Bursary
Value: variable
Established by friends, family, alumni, and colleagues in memory of Richard J. Hand, dedicated professor and Dean of the School of Business, Vice-Principal (Resources) at Queen's, and cherished colleague and friend. Awarded on the basis of financial need to one or more students in the doctoral program in management. Funds are intended to support the doctoral work/research of students, and to provide some benefit to their education. Application to be made by letter to Chair of Doctoral Program in the School of Business with details of financial need and the activities the bursary would support. Application can be made at any time.

The Sutton Bursaries
Value: variable
Established by Gerald D. Sutton (B. Comm. '48, M. Comm. '49) and Margaret (Scally) Sutton (B.A. '48) to be awarded to students in need of financial assistance. Applications should be submitted to the Associate Registrar (Student Awards) prior to 1 December.

The Walter F. Light Bursaries for Graduate Students in Education
Value: variable
Established by gifts from the late Walter F. Light, Sc. 1949, LL.D. 1981, former Chair of the Queen's University Board of Trustees, and CEO and Chair of Northern Telecom, Margaret Light, Arts 1947, and gifts in memory of Walter F. Light. Awarded on the basis of financial need to full-time students in graduate programs offered by the Faculty of Education. Applications are to be made to the Office of the University Registrar, Student Awards by 31 October.

Discipline Specific Fellowships, Scholarships, and Other Awards

For Students in the Humanities or Social Sciences

The Alfred Bader Graduate Fellowship
Value: $7,000 approx.
Established in May 2014 by Dr. Alfred Bader and awarded on the basis of academic excellence to a funding-eligible Ph.D. level student enrolled in a graduate program in Arts and Science in the School of Graduate Studies, to undertake studies in history related to 20th century Europe. Preference will be given to students whose research is related to Germany, 1933-1945. A one page research proposal will be required as part of the application process. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition.

The Alfred Bader Graduate Fellowship in the Humanities
Established in May 2014 by Dr. Alfred Bader and awarded on the basis of academic excellence to funding-eligible Ph.D. level students enrolled in a graduate program in the Humanities in the School of Graduate Studies. Preference will be given to incoming Ph.D. students in a graduate program in the Humanities. Consideration will be given to newly admitted doctoral students in other graduate programs in the Faculty of Arts and Science whose planned research falls under the general category of 'the Humanities'. A one page research proposal will be required as part of the application process. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition. Value: $7,000 approx.

The Alan R. Dennis Doctoral Award
Established in June 2017 by Alan R. Dennis, MBA 1984, and awarded on the basis of academic excellence to funding-eligible Ph.D. level students enrolled in the Smith School of Business doctoral program in the areas of Management Information Systems or Operations. Preference will be given to use funding for travel costs to conferences. The applicant must be nominated by a faculty member in the Management Information Systems or Operations area. Applicants are required to submit a one page description of their research. Final selection will be made by the PhD/MSc Awards Adjudication Committee of the Smith School of Business. Value: variable.

The Alice Corry Award in Education
Established through gifts from members of the Faculty Women's Club at Queen's University, along with gifts from family and friends of Alice Corry. The Alice Corry Award in Education was established to assist women pursuing graduate studies in Education, either at the Masters or Doctorate level. The award may be used to help fund fieldwork outside the province or may be used to assist with expenses associated with conference travel if the recipient is presenting a paper. A proposed budget must be

submitted with the request for funds. If there is a request for more than the award, a decision regarding the amount will be made by a Faculty of Education subcommittee. The successful applicant must be a registered, full-time student at the time the award is used, must demonstrate financial need, and under the trust fund guidelines the recipient must be considered an Ontario resident. The student must also demonstrate first class standing in the last two years of university study. Apply to the Graduate Studies Office in the Faculty of Education. Value: Variable

The Andrew Halkett Fellowship in Philosophy
Established by Margaret T. Halkett, in memory of her father, Andrew Halkett. Awarded biennially to a promising full-time candidate for the master's degree in the Department of Philosophy. Value: variable.

The Annual Thesis in Education Prize
Established by the Faculty of Education's Graduate Studies and Research Committee in 1993. Awarded for the most outstanding M.Ed. thesis completed each year at the Faculty of Education. All applicants for the prize who complete degree requirements between August 1 of the preceding year and July 31 of the current year will be considered. Awarded on the recommendation of a subcommittee, to be selected by the Graduate Studies and Research Committee. Value: variable.

The Arthur and Evelyn Lower Graduate Fellowship in Canadian History
Established in memory of Arthur R. M. Lower, C.C., M.A. (Toronto), Ph.D. (Harvard), F.R.S.C., and his wife Evelyn from the estate of Professor Lower. One of Canada's most eminent historians, Dr. Lower was for many years Professor of History at Queen's. The Lower Fellowship will be awarded to a graduate student whose principal study at Queen's University shall be Canadian history. When such applicants are identified, preference will be given to incoming or continuing graduate students whose previous degree(s) is/are from the University of Winnipeg. Recipients preferably will be intending to enter the teaching profession in Canada. The fellowship is open to Master's or doctoral students. The fellowship is renewable, subject to eligibility, availability of funding and departmental recommendation, at the doctoral level. Whenever the Department of History at Queen's University judges that there are no worthy candidates in a given year, the award will be deferred to another year. Value: approximately $10,000.

The Arthur Child Graduate Fellowship in Public Policy
Established in memory of Dr. Arthur Child, B.Comm. 1931, LL.D. 1983, by the Arthur J.E. Child Foundation and awarded on the basis of financial need and academic achievement to graduate students in the Master of Public Administration program in

the School of Policy Studies at Queen's University. Selection will be made by the Admissions Committee of the School of Policy Studies. Value: variable.

The Bader Fellowships
Established by Dr. Alfred and Isabel Bader to support research in Europe on realistic Pre-World War I art, with preference given to the study of baroque art by doctoral students in Art History for a period of one year. Students in the Ph.D. program in Art History who have completed their Comprehensive Examinations and language requirements, and are ready to commence thesis research and writing, are eligible to apply. Adjudication will be by the Committee on Graduate Studies in Department of Art. Successful applicants must complete the Research Seminar and have their Thesis Proposals approved by the Graduate Committee before taking up their Fellowships. Two or more fellowships. Value $22,000 each for students holding external awards of $10,000 or more during the tenure of the fellowship; $30,000 each for students with no external awards.

The Bamji Art Conservation Award
Established by Dr. Pervez (Perry) and Mrs. Annamaria Bamji, B.A. 1998, to assist with the costs associated with international travel, for a graduate student in the Art Conservation Program at Queen's University, during the course of their study for the purpose of research, coursework or conference participation. The travel must involve active participation by the student in an art conservation program endorsed by Queen's University. The Award is for travel preferably to Italy or to another European country, for graduate research work endorsed by Queen's University. If no suitable candidate is found in the Art Conservation Department, this Award should be given to a student in Graduate Studies in the Art History Department. Application should be made to the Department of Art History and Art Conservation by March 1. Value: variable.

The Bowen Graduate Fellowship in Human Geography
Established in October 2011 by Dawn Bowen, PhD 1998, and awarded on the basis of academic excellence to funding-eligible humanities and social science graduate students in the Ph.D. degree program in the Department of Geography in the School of Graduate Studies. Preference will be given to students in years 2 through 4 of a doctoral program, with preference given to students in year 3 or 4 of their program, whose research is in human geography and/or historical geography. This may be defined broadly as including research focused on historical issues employing either qualitative approaches (archival, hermeneutic, or interview) or mixed methodologies (e.g. historical research involving GIS or quantitative methods and qualitative methods). The research may be focused on any region of the world or past time period. Applicants shall submit a CV, copies of publications or other evidence of scholarly productivity, and a brief (1-2 page)

proposal for the research to be conducted during tenure of the award. The research proposal shall be crafted in consultation with a full-time member or members of the faculty of the Department. Selection will be made by the Graduate Committee of the Department of Geography. Value:$2,500 maximum.

The Bruce C. McDonald Award
Established by friends, colleagues and co-workers in memory of Bruce C. McDonald,(Law '63). Awarded on the basis of academic excellence to funding-eligible Master's or doctoral students enrolled in Law in the School of Graduate Studies. Selection will be made by the Associate Dean (Graduate Studies), Faculty of Law. Value: variable.

The C.A. Curtis Prize
Established by family, colleagues and former students in memory of Professor C.A. Curtis. Awarded annually for the best doctoral thesis in economics. Applications must be submitted by the thesis supervisor in January. Any Ph.D. thesis in economics completed during the preceding two calendar years is eligible for consideration. Selection is made by a committee of faculty members nominated by the Head of the Department. Value: Variable

The Cameron-Wood Prize
Established by friends to honour Professor James Carruthers Cameron, founder and Head of the Industrial Relations Department from 1937 to 1960 and Dr. W. Donald Wood, Director of the Industrial Relations Centre from 1960 to 1985 and first Director of the School of Industrial Relations. Awarded on the recommendation of the Director of the School to the graduating student who completes the M.I.R. degree program within one year and who has the most outstanding academic record. Value: variable

The Canadian College of Health Service Executives Eastern Ontario Chapter - Award of Excellence
The purpose of this Award is to recognize significant and exemplary efforts of students while completing their formal educational programs. The recipient will receive a Certificate of Citation together with a cheque for $1000. To qualify, submissions considered for the award will address a formal activity/project undertaken by students which advance or have the potential to: advance health care management in an applied context, make a substantive contribution to current or evolving health care policy interpretation/development, and/or give evidence of lessons learned/compelling case studies relevant to an applied health care system/leadership issue. All applicants for the Award of Excellence must be enrolled in the MPA at Queens University or have successfully completed the requirements for graduation within the previous six

months. All submissions for the Award must be based on a project completed during the current academic year. Submissions must be received by the Award of Excellence Coordinator by April 30. For more information, please contact: Elizabeth Bardon, CHE Tel: (613) 544-3400 x2656; Email: bardone@hdh.kari.net

The Canadian Institute of Planners Student Awards for Academic Excellence
Awarded annually to a graduate of the M.PL. program who has the highest academic average in the graduating class, and who has completed the degree requirements in no more than three years as a full-time student and not more than five years as a part-time student. On recommendation of the selection committee, the Director of the School of Urban and Regional Planning will nominate the candidate to CIP. The candidate must be a member of CIP. The award will consist of a CIP certificate and a book prize. The awardee will be selected in October from the graduates making the degree lists for the spring or fall convocations in the same calendar year.

The Catherine McGann Memorial Award
Established in June 1998 by family and friends in memory of Catherine McGann. Awarded annually to the graduate student in the Department of French Studies who has produced the best thesis in the past calendar year. Selection will be made by the Admissions and Awards Committee in the Department of French Studies. Value: variable.

The C.G. Prado Prize in Philosophy
Established in June 2008 by faculty and friends in honour of Carlos G. Prado, Ph.D. 1970, who was born in Guatemala, and received degrees from University of California at Berkeley and Queen's. During his distinguished career at Queen's he published more than a dozen books, supervised over thirty Ph.D. and M.A. theses, and inspired many students. The prize will provide an annual award to a graduate student in the Department of Philosophy who submits an outstanding doctoral thesis. To be eligible, a Doctoral student's thesis must be submitted within 7 years of the candidate's first registration in the Ph.D. program in the Department of Philosophy. Allowance will be made for maternity or other leaves. The prize will normally be awarded in October or November for theses submitted between October 1st of the previous year and September 30th of the year of the award. The winning thesis will be chosen by the Department of Philosophy's Board of Graduate Studies, in consultation with the Head of the Department. Value: variable.

The Clarence J. Hicks Fellowship in Industrial Relations
Founded by friends of the late Clarence J. Hicks, Chairman of the Board of Trustees of Industrial Relations Counsellors, Inc., New York City, and pioneer in the field of

industrial relations through whose leadership and assistance the Department of Industrial Relations was established at Queen's University in 1937. The fellowship is awarded annually for graduate study or research in industrial relations at Queen's University. Value: variable.

The Clifford M. Brown Discovery Travel Award
Established in March 2009 by Clifford M. Brown in memory of his parents Dr. Abbey A. Brown and Isabelle Ann Weintraub Brown and awarded on the basis of academic excellence to funding -eligible Master's or Ph.D. students enrolled in the School of Graduate Studies who wish to pursue travel opportunities that support the student's area of study and their appreciation of arts and culture. Preference will be given to the study of art by graduate students from the Department of Art, and then to graduate students in any department of the Faculty of Arts and Science; for instance, study of languages, history, other creative arts, as well as the social sciences. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition. Value: variable

The COGECO Scholarship
Established in 1995 by COGECO Inc., a Canadian communications company, and awarded on the basis of high academic standing to students pursuing graduate studies in the social aspects of communications at Queen's University. Selection will be made by a committee in the Department of Sociology. Two awards are available annually. If there are no available candidates in the area of social aspects of communications in the Department of Sociology, the committee can consider candidates from other departments in areas of communications. Value: variable, at least $2,500 per award.

The Daniel Soberman Ph.D. Scholarship in Constitutional and Federalism Studies
Established in March 2012 by Daniel Soberman, LLD 2008, and Patricia Soberman, MA 1963, in recognition of Daniel's leadership as Dean, Faculty of Law, in establishing the Faculty of Law's LL.M. program in 1969. Awarded on the basis of academic excellence to students registered in the School of Graduate Studies full-time in years 1 through 3 inclusive of the Ph.D. degree program in Law. Recipients must have a demonstrated interest in constitutional law and federalism studies. Selection will be made by the Associate Dean of Graduate Studies and Research in the Faculty of Law, and the name(s) of the recipients shall be forwarded to the School of Graduate Studies. Value: $6,000 approx.

The David C. Smith Memorial Fellowship in Economics
Established in January 2001 by Alfred and Isabel Bader in recognition of the tremendous contribution of David C. Smith, LLD 1994, to the growth and development

of the Graduate Program in the Department of Economics at Queen's University, while he was department head from 1968 to 1981, and to his work with Alfred and Isabel Bader in establishing the International Study Centre at Herstmonceux. Awarded to a Ph.D. student in Economics showing particular promise in his or her graduate work. The Fellowship will be awarded on the recommendation of the Head of the Department of Economics in consultation with the Chair of Graduate Studies. Value: variable

The David L. Lindsay Award for Public Policy Studies
Established in April 2013 by friends and colleagues in honour of David L. Lindsay, BCom 1981, former deputy minister in the Ontario government and a fellow at the School of Policy Studies. Awarded to a graduate student or graduate students entering the first year of the full-time Master of Public Administration program or the part-time Professional Master of Public Administration program, School of Policy Studies, in the School of Graduate Studies at Queen's University. Preference will be given to: students whose academic interests and/or professional field are in the areas of natural resources, environment, infrastructure, economic development, energy, and innovation; and who are employed with the Ontario Public Service at the time of selection. The selection criteria will include factors that help shape a well-rounded public servant, including academic excellence, record of community service, and demonstrated promise in their field of public service. The School of Policy Studies Selection Committee will review the dossier of incoming students every year and will select the successful recipient(s). Value: variable.

The D.D Monieson Doctoral Fellowship
Established in honour of Professor Emeritus D.D. Monieson. An enduring passion that guided Professor Monieson's scholarship was his interest in the nature of knowledge, its origins, its limits, and its validity. Many of Professor Monieson's writings related in one way or another to the idea of usable knowledge – research that advances our thinking about business practice. Funding-eligible post-comprehensive examination Ph.D. students in the Smith School of Business are eligible for this award, and students must be nominated by their thesis supervisors. In celebration of Professor Monieson's career, this award is based on academic excellence and a thesis topic that contributes to our usable knowledge of a business issue of contemporary importance, in addition to making a contribution to a relevant theoretical domain. This award will be adjudicated by the Chair of the Ph.D. program in consultation with the Director of the Monieson Centre. Value: $5,000.

The D.D. Monieson Graduate Business Scholarship
Established in November 2003 in honour of Professor Emeritus D.D.

Monieson. Awarded on the basis of academic excellence to a student at the beginning of the Ph.D. in Management at Queen's University, who graduated in the previous term from the M.Sc. in Management program in the Smith School of Business at Queen's University. Awarded in early Fall. Value: Variable.

The Department of Classics Travel Grant
Established in January 2010 by the friends of the Department of Classics. Granted to graduate students or undergraduates registered in the Department of Classics. The grant is available to contribute to the support of field research that must be carried out at a considerable distance from Queen's University. Granted on the basis of the academic merit and feasibility of the proposed field study research described within the Department of Classics Travel Grant application. Selection will be made by the Department of Classics Awards Committee. Value: variable.

The Department of Gender Studies Graduate Award
Awarded on the basis of academic excellence to funding-eligible Master's students enrolled in Department of Gender Studies in the School of Graduate Studies. Selection will be made by the Departmental Graduate Studies Subcommittee. Value: $2,500.

The Department of Geography Graduate Fellowship
Established in January 2001 by an anonymous donor to the Department of Geography at Queen's University. Awarded to a full-time graduate student in the Department of Geography on the basis of academic excellence, and meaningful research and study. This Fellowship will be awarded annually to a graduate student pursuing a Ph.D., M.Sc. or M.A. Value: minimum of $15,000.

The Department of Geography Graduate Awards for Exceptional Merit
Established in January 2001 by an anonymous donor to the Department of Geography at Queen's University. Awarded to five to seven full-time graduate students who have been admitted to a Master's or Ph.D. program in the Department of Geography on the basis of academic excellence, and meaningful research and study. Value: $2,000 to $3,000.

The Donald Matthews Award in Policy Studies
Established by Donald Matthews, B.Sc.(Eng.) 1950 and awarded on the basis of academic merit and financial need to a Master of Public Administration student pursuing studies on issues related to national unity and government. Value: variable.

The Donald S. Rickerd Fellowship in Canadian-American Studies
Established jointly by the Donner Canadian Foundation of Toronto and the William H.

Donner Foundation, Inc. of New York City in appreciation of the outstanding contribution to the work of the two Foundations made by Donald Rickerd, graduate of Queen's University, who served for some twenty years as their President. The Fellowship, subsequently supported through Donald Rickerd's own personal donations, is awarded to graduate students working on any aspect of Canadian-American Studies, including Canadian-American relations and comparative studies. The fellowship may be renewed for a second, and in exceptional cases for a third, year after adjudication by the selection committee. Awarded on the recommendation of a selection committee appointed by the Dean of the School of Graduate Studies, chaired by the Dean of the School of Graduate Studies (or delegate) and composed of representatives of the Departments of Economics, History and Political Studies, and the School of Policy Studies. In any given year the fellowship may be awarded to the top candidate or two candidates if the selection committee deems both candidates to be equally qualified and deserving. Value: variable.

The Don Wood Fellowships in Industrial Relations
Established through a special appeal to honour Dr. W. Donald Wood, Director of the Industrial Relations Centre from 1960 to 1985 and first Director of the School of Industrial Relations. Awarded on the recommendation of the Director of the School to students in the Master of Industrial Relations program. Value: variable.

The Dorothy Warne Chambers Memorial Graduate Fellowships
Established from the estate of Harold Bair Chambers in memory of his wife Dorothy Warne Chambers. Two one-year fellowships tenable in the Departments English, History or Philosophy are awarded to students in a Doctoral degree program at Queen's University. The fellowship is to be used to help defray travel costs associated with research projects in distant North American destinations or abroad. The recipient will be chosen through the adjudication process of the Graduate Dean's Travel Grant for Doctoral Field Research competition. Value: variable.

The Douglas H. Clark and Bonney G. Clark Memorial Scholarship
Established in March 2017 in memory of Douglas H. Clark and Bonney Clark by their four children, Wendy Bailey, B.Sc. 1979, Heather Faris, B.Sc. 1983, Andrew Clark, and Carolyn Clark, B.Sc. 1991, M.D. 1995. Awarded on the basis of academic excellence to funding-eligible Master's or Ph.D. level students enrolled in Political Studies in the School of Graduate Studies. Preference will be given to students whose research is related to federal/provincial relations in Canadian politics. Selection will be made by the Departmental Graduate Studies committee/group. Value: variable.

The Dr. H. Martyn Estall Graduate Award
Established in memory of Dr. H. Martyn Estall, former Professor of Philosophy, by family, friends, colleagues and former students. Awarded on the basis of academic achievement to assist graduate students in the Department of Philosophy to attend a significant conference. Preference will be given to students who wish to present a paper at or attend the annual meeting of the Canadian Philosophical Association. Selection will be made by the Coordinator of Graduate Studies and the Departmental Graduate Studies Committee. Application should be made in writing and may be submitted at any time throughout the year. Value: variable.

The Dr. Shirley Taylor Memorial Scholarship
Established in September 2007 by friends and colleagues in memory of Dr. Shirley Taylor, who served as an associate professor and Distinguished Faculty Research Fellow in Marketing at the School of Business. Awarded on the basis of academic achievement, demonstrated research ability, and service to the Queen's community to full-time students enrolled in the marketing field of study in the Ph.D. in Management program who have successfully completed the comprehensive examination requirement and have defended or made substantial progress on their thesis proposal for the purposes of attending a marketing doctoral consortium. Awarded on the recommendation of the Marketing area faculty and the Chair of the Research & Graduate Programs, or designate, at the Queen's School of Business. The School of Business will forward the nomination to the School of Graduate Studies. Value: variable

The E. Gay Mitchell Graduate Fellowship in Finance
Established by E. Gay Mitchell, B.A. '84, and awarded on the basis of academic achievement to a graduate student in either the Master's or Doctoral degree program in the Department of Economics and/or the School of Business, with a designated research specialization in Finance. The fellowship will be awarded to a graduate student from the Department of Economics in even years and to a graduate student from the Smith School of Business in odd years. Application should be made to the School of Graduate Studies by 1 March. Value: variable

The Elizabeth Neave Fellowship
Established in 2014 by Edwin (Ted) Neave in memory of his wife Elizabeth Lees Neave and awarded on the basis of academic excellence to funding-eligible M.Sc. students in the School of Business. The applicant is required to submit a half page outline of their research project. Selection will be made by the QSB PhD/MSc Awards Adjudication Committee. Value: variable.

The Ellen Wilson Buzek Fellowship

Established by a bequest from the estate of Douglas Sheppard Wilson for postgraduate studies in the history of Eastern Europe commencing 1914. Open to first-class candidates for both the master's and doctoral degrees for one year of study and research. Value: variable.

The Empire Life Scholarship
Established by the Empire Life Insurance Company to commemorate its 75th anniversary, this scholarship is awarded on the basis of academic excellence to a full-time student or students entering the Masters of Public Administration program. The scholarship is awarded on the recommendation of the School of Policy Studies. Value: $5,000

The Environmental Studies Graduate Scholarship
Established in September 2006 by the School of Environmental Studies and awarded to graduate students in the Master of Environmental Studies degree program who achieve the highest overall combined average in ENSC-801* and ENSC-802*. If more than one student qualifies for the award, the funds available for an award for that year will be divided equally among the awardees. Selection will be made annually by the Graduate Program Committee of the School of Environmental Studies. Value: variable.

The Eric W. Cross Fellowship in Law
Established in May 2009 by the Estate of Daphne Cross in memory of her father Eric W. Cross, B.A. 1824, M.A. 1925. Awarded on the basis of academic excellence to funding-eligible graduate students enrolled in one of the graduate programs in the Faculty of Law. Selection will be made by the Awards Committee, Faculty of Law. Value: variable.

The Ernst Loeb Memorial Graduate Scholarship Established from the estate of Raymond Max Immerwahr to honour the memory of the late Professor Emeritus of German Literature, Ernst Loeb. Selection of this award is by a committee in the Department of German and is awarded on the basis of academic excellence to a Master's or Doctoral student in the Department of German who is specializing in German Literature from the Classical Period through the Twentieth Century. Value: variable

The Founder's Medal
Established by an anonymous donor in honour of Donald Gow, Founder and first Director of the School of Policy Studies. Presented to a full- or part-time student graduating from the MPA Program with the highest academic standing. Value: Medal

The Frank Collom Memorial Graduate Award

Established in September 2006 by family, friends and colleagues of Professor Frank Collom, a long-time faculty member of the Queen's School of Business. Awarded on the basis of academic excellence to a student in the first year of the Master of Industrial Relations (MIR) program who has an undergraduate degree from Queen's University. Preference will be given to a student with a Bachelor of Commerce degree from Queen's University. Selection will be made by the MIR Admissions Committee in the School of Policy Studies. Value: variable.

The Frank Wyatt MacLean Graduate Fellowships in Education
Established by a bequest from the late Frank Wyatt MacLean (BA'49) who spent many years in the field of Education. Awarded to full-time students in the M. Ed. program on the basis of academic achievement at the B. Ed. level and demonstrated professional achievement in the field of education. Recipients must be graduates of the Queen's Faculty of Education and may not hold other Queen's Fellowships or Scholarships totaling more than $2,000. Application must be made to the Dean of the Faculty of Education not later than 1 April. Value: variable.

The G. G. Baron Van der Feltz Prize
Mrs. Ellen Frei has established a prize in memory of her father to be awarded annually upon the recommendation of the Head of the Department for the best major research paper on an international topic submitted to the Department of Political Studies in completion of degree requirements for the Master of Arts. Value: variable

The Geoffrey H. Wood Foundation Master of Science in Management Awards
Established by the Geoffrey H. Wood Foundation. Awarded on the basis of financial need to one or more students in the Master of Science Program in Management. Funds are intended to support the Masters work/research of students. Application is to be made by letter to the Chair of the Master of Science Program in Management, Smith School of Business with details of financial need and the activities the bursary would support. Application may be made at any time. Value: variable.

The Geoffrey H. Wood Scholarship
Established by the Geoffrey H. Wood Foundation. Awarded annually to student(s) in the doctoral program in Management at Queen's University with high academic standing. Selection will be made by the Chair of the Ph.D. program in the Smith School of Business. At the Chair's discretion, the scholarship may be divided among two or more doctoral students. The award monies can be designated, by the Chair, to support travel to academic conferences, research studies, and other activities which will enhance the student's graduate education. Value: variable

The George MacBeth Milligan Fellowship in Philosophy
A fellowship, endowed by George MacBeth Milligan of Toronto, is awarded annually to a university graduate qualified to carry on independent research work in Philosophy at Queen's University for the whole session and embody the results in a thesis. Value: variable

The George and Ruth Toller Graduate Award
Established in January 2017 by George Toller, B.A. 1950, and his wife, Ruth Toller. Awarded on the basis of academic excellence to funding-eligible Master's students enrolled in the School of Religion in the School of Graduate Studies. Selection will be made by the Departmental Graduate Studies committee/similar group. Value: $5,000

The H. Carl Goldenberg Scholarship in Industrial Relations
Established in memory of H. Carl Goldenberg (1907-1996), lawyer, advisor to provincial and federal governments, Royal Commissioner, Senator, and one of Canada's most eminent labour mediators and arbitrators. Awarded to a student with a record of strong academic achievement who is pursuing a Master of Industrial Relations degree with a focus upon industrial relations. The recipient will be encouraged to develop a research initiative based upon Carl Goldenberg's interest and work in dispute resolution and to make use of the Queen's Archives Goldenberg Papers Collection. Recipients of this award will be known as the Goldenberg Scholar. Value: variable

The H.R. Stuart Ryan Fellowship in Law
Established in March 2015 by Andrew Best, LL.B. 1981, in memory of H.R. Stuart Ryan, LL.D. 1991, who was a founder of the Law School. Awarded on the basis of academic excellence to funding-eligible international students who are from one of the Commonwealth countries. Recipients must be enrolled as regular full-time international students in years 1 through 3 of the PhD program in Law in the School of Graduate Studies. A student can hold the fellowship for more than one year if eligible/nominated. Selection will be made by the Awards Committee of the Faculty of Law with the assistance of a recommendation from the Associate Dean of Graduate Studies and Research in the Faculty of Law. Value:$12,000

The Ida Mmari Memorial Award
The award will be given to the student with the highest Grade Point Average who completes the M.PL. Report or Thesis within two years of commencement of the program. Value: variable

The Isabel Bader Bursary in Textile Conservation
This bursary was established by Dr. Isabel Bader for the study of textile conservation,

which links to one of her great interests, costumes and their design. The award is available to graduate students in the Master of Art Conservation Program, Department of Art, who are pursuing summer internships in art conservation, with preference given to students in textile conservation. Application is by letter to the Director of the Art Conservation program, no later than February 15th. Value: variable.

The Iva Speers Fellowship in Art History
Established by Mrs. Iva Speers to support and enhance the study of graduate students in Art History at Queen's University. The fellowship will be awarded to a student whose work explores spirituality and art. Value: variable.

The James W.S. Jamieson Award
Established by a bequest from the estate of James W.S. Jamieson for graduate studies in the Department of English. This scholarship is to be awarded annually to an outstanding student specializing in Canadian literature. Students in Years III or IV of a doctoral program are eligible for consideration, and selection will be made in the Spring by a committee established by the Head of the Department of English. Value: variable.

The Jeff McGill Graduate Fellowship
Established by Kamyar Moud, M.Sc. 2004, in honor of Professor Jeff McGill who has brought significant advancements in knowledge to the field of Management Science, as well as having inspired many students over the years. This scholarship is awarded on the basis of academic excellence to students enrolled in the MSc or PhD program in Management in the following order of priority: i)international MSc students in Management Science, ii) international PhD students in Management Science, iii) international MSc students in other areas of specialization in Smith School of Business. The applicant must be nominated by the Management Science faculty. The applicant is required to submit to the Management Science area a full page outline of their research project. Selection will be made by the PhD/MSc Awards Adjudication Committee of Smith School of Business. Value: variable.

The James Robertson Carruthers Memorial Prize in History
Established in January 1984 and revised in March 2017 in memory of James Robertson Carruthers, M.A. 1975. Awarded to Master’s level students enrolled in Department of History in the School of Graduate Studies with the highest academic standings at the end of their first term of registration. Selection will be made by the Departmental Graduate Studies committee/similar group. Value: variable.

The Joseph Leslie Engler Dissertation Fellowship in Canadian History
In honour of the late Joseph Leslie Engler, B.A. (Hon)'40, M.A. '41, and established in

accordance with the will of the late Henrietta Aileen Engler, the Joseph Leslie Engler Dissertation Fellowship in Canadian History will be awarded to an outstanding Ph.D. student who, during the tenure of the award, is expected to be in the final full year of research and writing for a Ph.D. degree in Canadian history at Queen's University. Application must be made by letter to the Chair of the Department of History by 30 March in the year of application. Value: variable

The Joseph S. Stauffer Foundation Scholarship in Canadian Art and Architecture
To be awarded annually to a student entering his/her second year of the M.A. program in Art History, deemed to have both high academic standing in course work and demonstrated potential for original research, who can provide sufficient evidence of intent to write a thesis on a topic in Canadian Art or Architecture in order to fulfill the requirements of the degree. Value approx. $4,000

The Just Society Award
Established by Thomas S. Axworthy, M.A. '71, Ph.D. '79, with royalty proceeds realized from the sale of the publication entitled A Just Society, co-authored with former Canadian Prime Minister Pierre Trudeau. Awarded to a full-time student in the Masters of Public Administration Program on the basis of academic excellence and financial need. This award is intended for a student who is doing research on the issues of federalism, social justice and equity in Canadian society and the ways in which they can be strengthened in the future. Application is by letter to the School of Policy Studies at the time of application for admission to the MPA program. The selection is made by the Director of the School of Policy Studies. Value variable.

The Ken Lockwood Memorial Award in Art Conservation
Established in memory of Ken Lockwood, M.A.'84, by family, friends and colleagues, and awarded on the basis of financial need and academic achievement to a graduate student registered in the Master's program in Art Conservation at Queen's University. Selection will be made by the Department of Art's Graduate Committee on Awards by 31 October. Value: variable.

The Kevin A. Armstrong Memorial Award
Established in April 2007 by Alan and Ursula Armstrong in memory of their son Kevin A. Armstrong, M.A. (Philosophy) 1999, and awarded to a graduate student in the first year of any graduate program, with preference given to a student in the Master's program in the Department of Philosophy. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition. Selection will be made based on academic achievement. Value: variable.

The Law Visible Minorities and Indigenous Students Award
Established in December 2005 and revised in May 2018 by donations from alumni of the Faculty of Law at Queen's University and awarded on the basis of academic excellence to funding-eligible graduate students enrolled in one of the graduate programs in the Faculty of Law. Recipients must be members of a visible minority or of Canadian Indigenous descent. For the purposes of this Award, Indigenous is defined as First Nation, Métis and Inuit (FNMI). Selection will be made by the Graduate Committee in the Faculty of Law. Value: variable.

The Lia Dower Memorial Scholarship
Established in memory of Lia Maria Dower (nee Fatels), (1967-1997), whose generosity of spirit, commitment to student life, and freely given friendship influenced a wide variety of people from many different places. At the time of her death, Lia Dower was enrolled in the MIR program in the School of Industrial Relations. Awarded to a mature student who is returning to university from the work force to pursue a Master of Industrial Relations degree. The recipient must demonstrate involvement in community service and volunteer work, with evidence of commitment to the improvement of student life, accompanied by outstanding academic performance. Recipients of this award will be known as the Lia Dower Scholar. Value: variable.

The Lower Fellowship in Canadian History
Established in October 2010 in memory of Arthur R.M. Lower, C.C. , M.A. (Toronto), Ph.D. (Harvard), from the estate of Professor Lower. Awarded on the basis of academic excellence to funding eligible graduate students enrolled in the Department of History in the School of Graduate Studies, whose principal area of study is Canadian History. Selection will be made by the Department of History. Value: variable.

The L.R. Wilson Public Service Internship Award
Established by The Wilson Foundation and awarded on the basis of academic excellence to funding-eligible graduate students enrolled in the Master of Public Administration program who will be participating in the four-month cooperative education placement with a government agency or organization. Students must be enrolled in the MPA professional placement course scheduled for the fourth term of MPA program. Selection will be made by the Queen's School of Policy Studies (QSPS) Awards Committee. Value: $4,000 (5 students per year)

The Marjorie McLean Oliver Graduate Scholarship
Established in December 2004 from the Estate of Marjorie McLean Oliver, and awarded to a woman student(s) proceeding to post-graduate study at the Masters or Doctoral level in the fields of Medieval European history, European history of an earlier period

than Medieval, or Classical Roman or Greek history. Preference shall be given to students who have obtained an Honours Bachelor of Arts or Master of Arts Degree in History from Queen's University. Applications should be made to the Graduate Coordinator, Department of History by 31 October. Value: variable.

The Marni Lithgow de Pencier (Arts '54) Award
Established by the Estate of Marianne de Pencier, and awarded on the basis of academic excellence to funding-eligible Master's level students enrolled in the Department of Philosophy in the School of Graduate Studies. Selection will be made by the Departmental Graduate Studies committee/similar group. Value: variable.

The Masters of Industrial Relations Alumni Fellowship
Established in 2012 by Industrial Relations alumni and awarded on the basis of academic excellence to funding-eligible graduate students entering the first year of the Master of Industrial Relations degree program in the School of Graduate Studies. Selection will be made by the MIR Student Awards Committee and the name(s) of the recipient (s) shall be forwarded to the School of Graduate Studies. Value: variable.

The Martin F. J. Prachowny Award
Established in May 2018 by Marguerite Prachowny in memory of her husband Martin F.J. Prachowny, who taught in the Department of Economics, 1967-2000. Awarded on the basis of academic excellence to funding-eligible Masters or PhD students enrolled in the Department of Economics in the School of Graduate Studies. Preference will be given to students pursuing study and research in the field of Macroeconomics. Selection will be made by the Departmental Graduate Studies committee or similar group. Value: $2,500

The Melville S. Hatch Memorial Fellowships
Established from the estate of Muriel (Billie) D. Hatch in memory of her husband Melville S. Hatch and awarded on the basis of academic excellence to full-time funding eligible graduate students in the M.Sc. or Ph.D programs in the Smith School of Business. Value: variable.

The Michael D. Failes Graduate Fellowship in Labour and Employment Law
Established in December 2012 by students, friends and colleagues in memory of Michael D. Failes, LLM 1986, distinguished scholar, highly respected counsel and advocate, teacher and friend. Awarded on the basis of academic excellence to funding eligible students registered in the School of Graduate Studies as full-time first-year students in the LL.M. program or full-time students in the Ph.D. program in Law, who

have a stated research interest in the area of labour and employment law. For doctoral students, the fellowship may be renewed each year provided that the cumulative multi-term grade point average over each academic year (fall, winter and spring term) is at least B+ (equal to or greater than GPA 3.30). Selection to be made by the Associate Dean of Graduate Studies and Research in the Faculty of Law, in consultation with the Director of the Centre for Law in the Contemporary Workplace. Value: variable

The Moira Anne (Courtney) Hudgin Graduate Scholarship in Art
Established in February 2004 and revised in September 2016 by Moira Anne (Courtney) Hudgin, B.A. (Hons) 1968. Awarded on the basis of academic excellence to funding-eligible Masters or PhD level students enrolled in the Department of Art History and Art Conservation with preference to a student pursuing research in North American Indigenous art. Preference will also be given to students who self-identify as Aboriginal. Selection will be made by the Departmental Graduate Studies committee/similar group. Value: $2,500

The Molson Canadian Science of Marketing Award in the Smith School of Business
Established by the firm of Bension-Byrne D'Arcy and by Molson Inc. as a tribute to Daniel J. O'Neill, CEO Molson Inc (MBA 1976) who has demonstrated leadership in the field of marketing throughout his career. Awarded on the basis of academic excellence to a student studying the science of marketing in a Masters or Ph.D. program. Selection will be made by the Smith School of Business. Value: variable.

The Neil Morrison Fellowship in Economics
Established in 2014 by Neil Morrison, BA 1986. Awarded on the basis of academic excellence to funding-eligible Masters and Ph.D. level students enrolled in the Department of Economics in the School of Graduate Studies. First preference will be given to Ph.D. level students. Selection will be made by the Departmental Graduate Studies committee/group. Value: variable

The Norman Macintosh Memorial Fellowship in Accounting
Established as an initiative of Dr. Cheryl S. McWatters and with financial support from QSB Faculty and PhD alumni, in memory of Professor Emeritus Norman B. Macintosh. Awarded on the basis of academic excellence to funding-eligible PhD students in the School of Business in the Accounting field. Selection will be made by the QSB PhD/MSc Awards Adjudication Committee. Value: variable

The Ontario Graduate Scholarship in Humanities
Established in October 2013 by Barbara Parker, MD ‘76 and her husband Kevin Parker, BA(Hons)’74, M.Div.’77, M.A.’78, with matching support from the Province of Ontario.

Awarded on the basis of academic excellence to a funding-eligible Master's or Ph.D. level student with preference given to a student enrolled in a graduate department or program in the Humanities disciplines in the School of Graduate Studies. Selection will be made by either the Fellowship Committee of the School of Graduate Studies OR by the School of Graduate Studies in consultation with the relevant graduate departments and program. The award will be administered in compliance with all OGS program guidelines. Value: $5,000

The Poole Award in Women's and Gender Studies
Established in May 2012 by Alice Poole, Arts 1942, and awarded on the basis of academic excellence to funding-eligible Master's students enrolled in Gender Studies in the School of Graduate Studies, and who have a demonstrated research interest in studies related to increasing understanding of and action on improvement of the status of women. Selection will be made by the Awards Committee of the Department of Gender Studies. Value: variable, minimum $2,000

The Professor Frank Pearce Prize
Established in September 2016 in honour of Professor Emeritus Dr. Frank Pearce by The Steve and Sally Stavro Family Foundation. Awarded to funding-eligible Master's or Ph.D. level students enrolled in the Department of Sociology, Department of Political Studies, Department of Geography and Planning, Department of Philosophy, or Cultural Studies who submit the best essay (5,000 words) on the topic of radical critical theory and social justice. Applicants are to submit a letter of application to the office of the Vice-Dean in the Faculty of Arts and Science prior to 15 February. Selection will be made by a committee convened and chaired by the Vice-Dean of the Faculty of Arts and Science. Value: $1,500

The QSR Graduate Fellowship
Established in 2014 by Dr. Bruce and Mrs. Linda Hutchinson and awarded on the basis of academic excellence to funding-eligible Master's level students enrolled in Religious Studies in the School of Graduate Studies. Preference will be given to students in year 1 of the Master's program. Selection will be made by the Departmental Graduate Awards Committee (or equivalent committee within the Department). Value: variable

The Queen's MPA Alumni Award
Established by the School of Policy Studies in recognition of the continuing support of MPA alumni to advanced education in public policy and management. Awarded to one or more full-time students in the Master of Public Administration Program on the basis of academic excellence and financial need. Application is by letter to the School of Policy Studies at the time of application for admission to the MPA program. The

selection is made by the Director of the School of Policy Studies. Value: variable.

The Richard J. Hand Graduate Awards in Management
Established by friends, family alumni, and colleagues in memory of Richard J. Hand, dedicated professor and Dean of the School of Business, Vice-Principal (Resources) at Queen's, and cherished colleague and friend. Awarded annually, on the basis of academic achievement, to one or more students entering or enrolled in the doctoral program in management at Queen's. As far as possible the award will be given to a student who exemplifies the values so dearly held by Professor Hand: service to Queen's and the community, leadership, humanity, and the pursuit of excellence. Preference will be given to individuals who hold an undergraduate degree from Queen's. Application to be made to the Chair of Doctoral Program in Management. Selection will be made by the Chair in conjunction with the Ph.D. committee. Deadline: 1 November. Value: $4,000

The Richard S. Malone Memorial Fellowship in Economics
Established by his wife and family in memory of Richard S. Malone, retired publisher of The Globe and Mail, to encourage the study of Economics by Canadian citizens who are pursuing or who intend to pursue a career in Journalism in Canada. Awarded annually to a full-time graduate student in the Department of Economics who, within the twelve calendar months immediately preceding the award of the Fellowship, was either i) in full-time attendance at a recognized Canadian school of journalism and has advised Queen's University in writing that he or she intends to pursue a career in journalism in Canada; or ii) pursuing a full-time career in journalism in Canada; or iii) pursuing a full-time career in journalism outside Canada in the employment of a Canadian corporation which carries on a journalistic endeavour within Canada. Value: variable

The Robert Grant Fellowship in Industrial Relations
Established in February 2004 by Robert M. Grant, MIR' 87. Awarded on the recommendation of the Director of the School to a graduate student in the Master of Industrial Relations degree program at Queen's University on the basis of financial need and achievement. Value: variable.

The Robert J. Wilson Thesis/Dissertation Development Award
Established in November 2006 and awarded to a graduate student or students in the Faculty of Education with a demonstrated research interest in theoretical and practical contributions to the fields of (a) classroom assessment practice, (b) large-scale assessment practice, or (c) program evaluation. Applicants are required to use established or innovative theoretical frameworks in at least one of these areas as a foundation for their research to be eligible for this award. Applicants who have had

their research approved by their supervisory committee as part of their graduate degree at the Faculty of Education within one year of the application deadline are eligible to apply. The application deadline will be the same as the one established each year by the Faculty's Graduate Studies and Research Office for student award applications to the Social Sciences and Humanities Research Council (SSHRC). Details on how to submit an application for the Robert J. Wilson Thesis/Dissertation Award are available from the Faculty of Education's Graduate Studies and Research Office. Selection will be made by the Wilson Award subcommittee of the Faculty of Education Graduate Studies Committee. Value: variable, to a maximum of $500

The Robert Sutherland Fellowship in Law
Established in November 2014 by alumni and friends of Queen's Faculty of Law to honour Robert Sutherland (BA, 1852), British North America's first black lawyer, and the first person of African heritage to graduate from Queen's University. Awarded on the basis of academic excellence to funding-eligible international students enrolled in the Master's (LL.M.) or Doctoral program in Law in the School of Graduate Studies. Preference will be given to students from the Caribbean nations, including Jamaica, Barbados and Trinidad & Tobago. Selection will be made by the Awards Committee of the Faculty of Law. Value: variable; approx. $6,000 minimum

The Roger Graham Fellowship in Modern Canadian History
A fellowship endowed by Mrs. Kathleen Graham is awarded annually on the recommendation of the Department of History to an incoming graduate student who will be specializing in modern Canadian history in the Department of History. Value: variable.

The Rosa Baier and Luis Bruno Fund
Established in January 2016 by Rosa Bruno-Jofré in memory of her mother Rosa Baier and father Luis Bruno. Awarded on the basis of academic excellence to funding-eligible Master's or Ph.D. level students enrolled in the Faculty of Education in the School of Graduate Studies. Funding is to be used for expenses related to data collection for a student's project or thesis. Selection will be made by the Departmental Graduate Studies committee/similar group. Value: $500

The Rose A. Freeman Memorial Award
Established in September 2006 by John G. Freeman, B.A. 1976, B.Ed. 1977, M.Ed. 1990, in memory of his mother Rose A. Freeman. Awarded to a graduate student Teaching Assistant in the Faculty of Education who directly contributes to the learning experience of Bachelor of Education (Con.Ed., B.Ed., Dip. Ed.) students through exhibiting outstanding commitment to the value of learning, availability to students,

good organizational skills, and motivation. Con.Ed., B.Ed., Dip. Ed. students may nominate their TA by submitting a letter to the Faculty's Graduate Studies and Bureau of Research Office by November 30th and March 31st each year. Complete nomination packages must consist of a minimum of two letters, one of which must be from a professor. The name of the TA and courses taught by him or her must be included in the nomination document as well as the details for why the TA is being nominated as deserving of the award. Selection is made by the Graduate Studies and Research Committee in the Faculty of Education. The Committee will review all nomination packages and determine Award winning TAs by taking into consideration all information received from both students and professors. All decisions are final. Value: variable.

The S. Mathwin Davis Memorial Award
Established in March 2009 by friends and colleagues in memory of S. Mathwin Davis, Ph.D. 1979, former Professor in the School of Policy Studies. Awarded on the basis of academic excellence, to a student interested in studying health policy and management, registered full-time or part-time, in a Master of Public Administration program offered by the School of Policy Studies. Selection will be made by the School of Policy Awards Committee by February 1. Value: variable

The Scarthingmoor Prize in Economics
Established in April 2006 by John Weatherall and awarded annually to a student whose Master's essay received a mark of at least 85%. Preference will be given to a student whose essay contributes to our understanding of political economy, economic growth and development, macroeconomic policy, or financial markets. However, an essay on any subject in Economics could be considered eligible. Selection will be made by a committee of faculty members selected by the Head of the Department of Economics in consultation with the Coordinator of Graduate Studies. To be eligible, the student must have submitted the final approved version of their Master's essay to the Department during the twelve-month period ending September 30 of each year. Value: variable.

The Scarthingmoor PhD Prize in Economics
Established in March 2017 by John Weatherall and awarded annually to a student whose has submitted the best PhD thesis in the field of Economics. Preference will be given to a student whose thesis contributes to our understanding of political economy, economic growth and development, macroeconomic policy, financial markets, international economics, or economic history. Supervisors of eligible PhD students may send a letter of nomination, which specifies the name of the student and the title of the thesis to the Head of the Department by the annual deadline. Selection will be made by a committee of faculty members selected by the Head of the Department of Economics

in consultation with the Coordinator of Graduate Studies. To be eligible, the student must have submitted the final approved version of their PhD thesis to the School of Graduate Studies in fulfillment of degree requirements, during the twenty-four month period ending September 30 of each year. Value: variable.

The Sir James Aikins Fellowship in Canadian History
A fellowship endowed by Sir James Aikins, K.C., LL.D., of Winnipeg, and supplemented by the University is awarded on the basis of distinguished work in the advanced Honours course in Canadian History or such other courses as the Professor(s) of Canadian and Colonial History shall determine and may be held only by students who return to the university for further work in Canadian History. Value: variable.

The Stanley Drabek Graduate Award in Political Studies
Established in November 2013 by Stanley Drabek, BA'58, M.A.'65, and awarded on the basis of academic excellence to funding-eligible Master's or Ph.D. level students enrolled in Political Studies in the School of Graduate Studies. Preference will be given to students studying Canadian politics. Selection will be made by the Departmental Graduate Studies committee/group. Value: variable.

The Sue Hendler Graduate Fellowship
Established in February 2011 by the Estate of Sue Hendler, who was an Associate Professor with the School of Urban and Planning from 1987 to 2009.Sue was also cross-appointed to Women's Studies, now Gender Studies, and served as its head for two separate terms. Awarded on the basis of academic excellence to funding-eligible graduate students enrolled in Urban and Regional Planning in the School of Graduate Studies who are working on planning ethics or women/gender and planning. Selection will be made by the School of Urban and Regional Planning Graduate Studies committee. Value: variable.

The TD Bank Financial Group Graduate Fellowship in Arctic Environmental Issues
Established in March 2009 by TD Bank Financial Group and awarded to funding eligible Master's or PhD level students pursuing research work in environmental issues that are of practical relevance to the Arctic region. The fellowship will provide travel and stipend support for graduate students to continue critical field research within the Arctic. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition. A one-page research summary must be submitted with the application materials. Value: variable.

The Timothy C. S. Franks Research Travel Fund
The Timothy C. S. Franks Research Travel Fund provides financial support for doctoral

candidates in the Departments of History and Political Studies pursuing dissertation research abroad. Doctoral candidates in the two departments may apply for funding to help cover travel and subsistence costs for field research outside North America. Grants will be made on a competitive basis annually or more frequently at the discretion of the awards committee. Applicants should provide an outline of their dissertation research, a description of the work to be undertaken abroad, and an estimate of the costs. Applications will be adjudicated by the Heads of History and Political Studies or their delegates, who may make one or more awards as they see fit. Value: variable.

The Tom Williams Award in Policy Studies
Established by Dr. Tom Williams, Professor in the School of Policy Studies, Dean of Education (1977-1986), and Vice-Principal Operations and Institutional Relations (1986-1995). Awarded to one or more students in the Master of Public Administration program, on the basis of academic excellence and financial need. Application is by letter to the School of Policy Studies at the time of application for admission to the MPA or PMPA program. The selection is made by the Director of the School of Policy Studies. Value: variable.

The Tripp-Smith Family Graduate Fellowship in Economics
Established in October 2005 by Eric C. Tripp, B.A. (Hons) 1981, and awarded on the basis of academic achievement to a graduate student in either the Master's or Doctoral degree program in the Department of Economics whose research is related to financial markets. Preference will be given to students whose research is concerned with financial derivatives. the Fellowship will normally be awarded annually to one student on the recommendation of the Coordinator of Graduate Studies of the Department of Economics, subject to the approval of the Head of the Department. Value: variable.

The Walter F. Light Graduate Fellowships in Education
Established by gifts from Walter F. Light, Sc. 1949, LL.D. 1981, former Chair of the Queen's University Board of Trustees, and CEO and Chair of Northern Telecom, Margaret Light, Arts 1947, and gifts in memory of Walter F. Light. Awarded on the basis of academic achievement and financial need to full-time students in graduate programs offered by the Faculty of Education. Selection will be made by the Dean of Education on the advice of the Advisory Committee on the Walter F. Light endowments for Education. Applications must be made to the Dean of Education. The number and value of the scholarships awarded each year may vary.

The W. C. Good Memorial Fellowship Award
Established by members of the Good Family in memory of William Charles Good. The fellowship is to be awarded to a graduate student in the Department of Economics, the

Department of History, the Department of Political Studies, or the Department of Sociology, and will normally be granted for two years with the possibility of extension for a third year. Preference will be given to a student whose research interests focus on issues of economic and social justice, human cooperation and/or egalitarian concerns. Master's students within their first two years of research, and Doctoral students within their first four years of research, are eligible. The School of Graduate Studies calls for nominations from eligible departments. In a year in which a competition is held, the deadline is normally mid-March. Selection will be made by the W. C. Good Memorial Fellowship Award Committee. Value: $20,000

The Wilhelmina Gordon Foundation in English
Established by the Imperial Order, Daughters of the Empire, in appreciation of the work of Professor Wilhelmina Gordon who served as National Educational Secretary from 1923 to 1937. Awarded to the Canadian student who qualifies for a first-class honours B.A. with a concentration in English and ranks first in the graduating group in English at Queen's University. The student must be proceeding to graduate work. Value $1,000

The William G. Davis Award
Established by the friends and supporters of William G. Davis, in recognition of his important contribution to public life as Premier of Ontario for over 15 years. Awarded to one or more full-time student in the Master of Public Administration program on the basis of financial need and academic excellence. Application is by letter to the School of Policy Studies at the time of application for admission to the MPA program. The selection is made by the Director of the School of Policy Studies. Total value for any year: $5,000.

The Women's Canadian Historical Society of Toronto Master's and Doctoral Award
Established by the Women's Canadian Historical Society of Toronto to celebrate the Society's 100th Anniversary and awarded annually to a Master's student and a Doctoral student with a specialization in Canadian History. Preference will be given to a Canadian Citizen or Landed Immigrant. Candidates must have a minimum of A- (or equivalent) standing. A selection committee in the Department of History will select the two candidates annually. Value: variable, but at least $2500 per award.

For Students in Life or Health Sciences

The Abrahams Award in Experimental Medicine
Established in March 1996 and revised in 2014 by the Abramsky Foundation to honour Dr. Vivian Abrahams, distinguished physiologist, Professor of Physiology at Queen's from 1963 to 1995 and Head of the Department from 1976 to 1988. Awarded on the basis

of research excellence to funding-eligible PhD level students enrolled in the current Physiology program, or in the field of Experimental Medicine in the Department of Biomedical and Molecular Sciences (DBMS), who shows exceptional promise for independent research. Selection will be made by the Abrahams PhD award committee (Experimental Medicine field, Biomedical and Molecular Sciences graduate program). Value: $1,400

The Advanced Research Design and Analysis Award
Established by Professor Sharon Burke and awarded annually beginning in 1996 to the student with the highest mark in Advanced Research Design and Analysis (NURS-800). The value is a one year subscription to the Canadian Journal of Nursing Research.

The Albert and Anne Francis Foundation Graduate Award
Established in February 2011 by The Albert and Anne Francis Foundation and awarded on the basis of academic excellence to funding-eligible Masters or PhD students enrolled in Nursing in the School of Graduate Studies. Selection will be made on the recommendation of the School of Nursing Awards Committee to the School of Graduate Studies. Value: variable, not less than $2500.

The Alumni Scholarship for Nursing Graduate Students
Established by Queen's Nursing Alumni and awarded on the basis of academic excellence to a student entering the first year of the graduate program in Nursing. Students in second year may also be deemed eligible for this scholarship if they have maintained first class standing. Value: variable

The Andrew McGhie Prize
Established by family, colleagues, students, and friends in memory of Andrew McGhie, Professor of Psychology at Queen's from 1968 to 1988 and Head of Department from 1981 to 1988. Awarded to the student graduating from the Department of Psychology who is judged to have submitted the most outstanding doctoral thesis in the previous twelve months. The judgement is made each Spring by a committee selected by the Head of the Department. The names of all winners are engraved on a plaque which is retained in the Department of Psychology. Value: variable

The A. Z. Arthur Book Prize
Established by family, colleagues, students, and friends in memory of Arthur Z. Arthur, Professor of Psychology at Queen's from 1966 to 1990. A book prize to be awarded to each of the top two students who have the highest standing in the M.A. Clinical Program in the Department of Psychology. The selection is made each August by a committee appointed by the Head of the Department of Psychology. The award will be

divided equally between the two qualified candidates. Value: variable.

The Beryl Bracken (Ferguson) Memorial Award in Nursing
Established in March 2012 by George W. Bracken, B.Sc.(Eng) 1956, and Margaret Bracken, B.A. 1997, in memory of his sister, Beryl Bracken (Ferguson), R.N., and awarded on the basis of academic excellence to funding-eligible Ph.D. level students in year one of Nursing in the School of Graduate Studies. Selection will be made on the recommendation of the School of Nursing Awards Committee to the School of Graduate Studies. Value

The Brian R. Shelton Graduate Fellowship
Established in May 2003 by Deborah Shelton, B.Ed. 1978, in memory of her husband Dr. Brian Shelton, Ph.D. 1979. Awarded on the recommendation of the Department of Psychology, Queen's University, to a graduate student entering the Ph.D. program in the department, with preference given to a student whose stated research interest is in the area of human experimentation psychology or psychophysics. The successful candidate may hold other awards for which he/she may be eligible in addition to this Fellowship. The Fellowship may be renewable each year for three years, with a possible extension for a fourth year, based upon the department's annual nomination for renewal. Value: variable.

The Caroline (Cairnie) Jenkins Memorial Prize
Established by the family and friends of Caroline Jenkins, B.Sc. Occ. Therapy 1981, who died in 1984. Awarded to two students entering the final professional year of the Occupational Therapy program in the School of Rehabilitation Therapy who have demonstrated academic excellence in Neurology and Physical Function coursework. Value: variable.

The Cora E. Hewitt Scholarship in Occupational Therapy
Awarded on the basis of academic excellence to a student entering the final professional year of the Occupational Therapy program in the School of Rehabilitation Therapy. Value: variable.

The Cora E. Hewitt Scholarship in Physical Therapy
Awarded on the basis of academic excellence to a student entering the final professional year of the Physical Therapy program in the School of Rehabilitation Therapy. Value: variable.

The Craigie Fellowship

Master's Fellowship: Established in February 2018 by Dr. James S. Craigie, B.A. 1955, M.A. 1957, PhD. 1959. Awarded on the basis of academic achievement and demonstrated research ability for funding eligible Master's level students enrolled in the Department of Biology in the School of Graduate Studies. Preference will be given to students researching primary productivity and energy flow as they relate to sustainable productivity in freshwater systems at the Queen's University Biological Station, or other relevant research location. The applicant will be required to submit a brief outline of their research project, past research experience, and principal objectives. Selection will be made by the Departmental Graduate Studies committee or similar group. The fellowship will be renewable for one additional year provided good academic standing and full-time status is maintained. Value: $12,000 ($6,000 per year x 2 years).

Doctoral Fellowship: Established in February 2018 by Dr. James S. Craigie, B.A. 1955, M.A. 1957, PhD. 1959. Awarded on the basis of academic achievement and demonstrated research ability for funding eligible PhD level students enrolled in the Department of Biology in the School of Graduate Studies. Preference will be given to students researching primary productivity and energy flow as they relate to sustainable productivity in freshwater systems at the Queen's University Biological Station, or other relevant research location. The applicant will be required to submit a brief outline of their research project, past research experience, and principal objectives. Selection will be made by the Departmental Graduate Studies committee or similar group. The fellowship will be renewable for three additional years provided good academic standing and full-time status is maintained. Value: $24,000 ($6,000 per year x 4 years).

The Deborah Louise Healey Memorial Award
Established in July 2011 by the family of Deborah Louise Healey and awarded on the basis of academic excellence to a Primary Health Care Nurse Practitioner student enrolled in the School of Nursing in the School of Graduate Studies. Selection will be made by the School of Nursing's Graduate Program Committee. Value: $2,500

The Dr. Gerald and Marion Marks Award in Pharmacology and Human Toxicology
Established in June 2008 and revised in 2014 by family, friends and colleagues in honour of Dr. Gerald Marks, former Head of the Department of Pharmacology and Toxicology, and Mrs. Marion Marks. Awarded to the M.Sc. or Ph.D. graduate student deemed to have had the best thesis in the current Pharmacology and Toxicology program or in the field of Therapeutics, Drug Development, and Human Toxicology in the Department of Biomedical and Molecular Sciences graduate program, in a calendar year. Students are nominated by their supervisor(s), which will include 1) a letter of nomination from the supervisor; 2) a letter of support from another faculty member who is familiar with the student's research; 3) the abstract of the thesis; and 4) an up-to-

date curriculum vitae of the student. The Field Coordinator for Therapeutics, Drug Development, and Human Toxicology will identify the successful candidate(s) in consultation with members of the staff, and make a recommendation to the School of Graduate Studies. Value: Award (value variable) and Plaque.

The Dr. Jeremy Nesheim Memorial Award in Biochemistry
Established in May 2002 and revised in February 2015 by family, friends and colleagues in memory of Dr. Jeremy Nesheim, B.Sc. 1991, Ph.D. (Minnesota). Awarded on the basis of academic excellence to a student enrolled in the first year of the Master's or Ph.D. program in the current Biochemistry program or in the field of Biochemistry and Cell Biology in the Department of Biomedical and Molecular Sciences graduate program. Preference will be given to a student who received their undergraduate degree at Queen's University. The candidate should demonstrate intent to pursue a career in research. The Field Coordinator for Biochemistry and Cell Biology will identify the successful candidate(s) in consultation with members of the staff, and make a recommendation to the School of Graduate Studies. Value: variable.

The Eldon Boyd Fellowship
Established in September 1972 by Professor E.M. Boyd and revised in October 2014. Awarded to a graduate student or students in the current Pharmacology and Toxicology program, or in the field of Therapeutics, Drug Development, and Human Toxicology in the Department of Biomedical and Molecular Sciences graduate program. Preference will be given to a student or students with the M.D. degree wishing to pursue graduate studies in Pharmacology and Toxicology or Therapeutics, Drug Development, and Human Toxicology. The Fellowship is renewable for 2 years dependent upon the student maintaining satisfactory progress. If there is no suitable candidate, the Fellowship may be awarded to a post-doctoral student for one year. The Field Coordinator for Therapeutics, Drug Development, and Human Toxicology will identify the successful candidate(s) in consultation with members of the staff, and make a recommendation to the School of Graduate Studies. Value: variable

Empire Life Public Health Sciences Fellowships
Established in January 2010 and last revised in September 2016 by the Empire Life Insurance Company. Three fellowships will be awarded annually on the basis of academic excellence and the potential to make an important contribution to the field of public health. These awards will be available to MSc, MPH or PhD students enrolled in Public Health Sciences in the School of Graduate Studies. The fellowships will contribute to the support of students undertaking graduate work and research in a wide range of public health disciplines. A bound copy of the graduate thesis (MSc, PhD) or

practicum report (MPH) supported by these funds shall be presented to Empire Life upon completion of the recipient's degree requirements. Annual selection of fellowship recipients will be made by a committee of faculty members in the Department of Public Health Sciences who teach in the graduate program. The committee will be chaired by the Graduate Coordinator of the Department. Value: approx. $20,000 per year, for 3 years.

The Environmental Studies Graduate Scholarship
Established in September 2006 by the School of Environmental Studies and awarded to graduate students in the Master of Environmental Studies degree program who achieve the highest overall combined average in ENSC 801* and ENSC 802*. If more than one student qualifies for the award, the funds available for an award for that year will be divided equally among the awardees. Selection will be made annually by the Graduate Program Committee of the School of Environmental Studies. Value: variable

The Faculty Award for Graduate Students in the School of Nursing
Established by faculty in the School of Nursing, and awarded on the basis of financial need and academic achievement to graduate students in the second year of the Master's degree program in the School of Nursing. Selection is made by the School of Nursing Graduate Program Committee. Nominations are to be submitted to the School of Graduate Studies by 30 April. Value: variable

The Gordon Wallace Swan Memorial Fellowship
Established in October 2010 by Grace and Andrew Swan in memory of their son, Gordon Wallace Swan, B.Sc. 1972 (Electrical Engineering), and awarded on the basis of academic excellence to funding-eligible Master's or Ph.D. students enrolled in the Centre for Neuroscience Studies in the School of Graduate Studies. Preference will be given to students who are conducting research in neurodegenerative disorders that include PSP (Progressive Supranuclear Palsy) and Parkinson's Disease. Selection will be made by the Graduate Committee of the Centre for Neuroscience Studies. Value: variable.

The Gwen Keough Memorial Scholarship
Established in April 1992 and revised in March 2015 by her parents Leona and William (Sc. 1948 1/2) and sisters Terry (Arts 1979) and Nancy (Ed. 1986) in memory of Gwenlyn J. Keough (Physical Therapy 1982). Awarded on the basis of academic excellence to a graduate student enrolled in an M.Sc. or Ph.D. program in Rehabilitation Science in the School of Graduate Studies. Selection will be made by the Leadership Team of the School of Rehabilitation Therapy. Value: variable

The Helen Chan Memorial Scholarship
Established by family and friends in memory of Helen Chan, B.Sc., Physical Therapy ’91, and awarded on the basis of academic excellence to a student entering the final professional year of the Physical Therapy program in the School of Rehabilitation Therapy. Value: variable.

The Honourable Hugh F. Gibson Memorial Award in Alzheimer's Research
Established in memory of Hugh F. Gibson, Q.C., (B.A. 1937, B. Comm. 1938) by his wife and awarded on the basis of outstanding academic and/or research achievement to a graduate student in either a Master's or Doctoral degree program in the area of Neuroscience with a focus on Alzheimer's research at Queen's University. Selection will be made by the Education and Training Committee of the Centre for Neurosciences Studies. Value: variable

The James Inglis Prize
Established by family, colleagues, students and friends in memory of James Inglis, Professor of Psychology at Queen's from 1959 to 1965 and from 1968 to 1992 and one of the founders of the Clinical Programme. A book prize to be awarded to the graduating doctoral student who has the highest standing in the Clinical Programme. The Selection is made each August by a committee appointed by the Head of the Department of Psychology. Value: variable

The Jane Poulson Memorial Award
Established in February 2004 by the Estate of Dr. Jane Poulson, B.Sc. 1974, M.Sc. 1976, with additional contributions by friends and colleagues and awarded on the basis of academic achievement to graduate students in the Therapeutics, Drug Development, and Human Toxicology field of the Biomedical and Molecular Sciences graduate program. The adjudication committee shall comprise three members including the graduate student representative, and the graduate field coordinator, and another faculty member associated with the field. Selection will be based upon all aspects of the student's graduate endeavour including: performance in course work, progress in research (based on a one-page abstract written by the candidate), participation in seminars/journal clubs, and performance in teaching in the first year of their training in the Biomedical and Molecular Sciences graduate program. Value: variable.

The Jellinck-Lyttle Graduate Fellowship in Biochemistry
Established in July 2011 and revised in February 2015 by Richard Lyttle, Ph.D. 1973, in honour of Dr. P. Harry Jellinck, Professor Emeritus in the Department of Biochemistry. Awarded on the basis of academic excellence to funding-eligible Masters or Ph.D. level

students enrolled in the current Biochemistry program or in the field of Biochemistry and Cell Biology in the Department of Biomedical and Molecular Sciences graduate program. Relevant working experience may also be considered. The Field Coordinator for Biochemistry and Cell Biology will identify the successful candidate(s) in consultation with members of the staff, and make a recommendation to the School of Graduate Studies. Value: variable.

The Jeremy Nesheim Graduate Travel Award
Established in July 2011 by family, friends and colleagues in memory of Dr. Jeremy Nesheim, B.Sc. 1991, Ph.D. (Minnesota). Awarded on the basis of academic excellence to funding-eligible Master's or PhD level students enrolled in Pathology and Molecular Medicine in the School of Graduate Studies. This should focus on support for graduate travel and expenses to an expert laboratory relevant to the student's field of study and recommended by the student's supervisor. Preferably this should provide the student with experience outside Canada. Prospective candidates should present their typed application to the Head of the Department during the second week of October. The application should include:1) a brief summary of the proposal (one page double spaced); 2) details of the laboratory that she/he intends to visit; 3) a summary statement as to the basis for the choice made; 4) an estimate of the level of financial support required, including the availability of additional funding support available; 5) a statement of support from the student's graduate supervisor. Selection will be made by the Department of Pathology Graduate Studies Committee. Value: variable.

The John and Eileen Hutton Graduate Student Nursing Award
Established in May 2018 by Dr. Eileen Hutton, BNSc 1974, DSc 2016, and Mr. John Hutton, BSc(Eng) 1972, and awarded on the basis of academic excellence to funding-eligible Ph.D. level students enrolled in Nursing in the School of Graduate Studies. Selection will be made by the School of Nursing Awards Committee. Value: $5,000

The John Deakin Buckley Walton Scholarship in Nursing
Established in October 2006 through a bequest from the estate of John D.B. Walton, Arts 1945. Awarded to the second year student enrolled in the Master of Science program of the School of Nursing, who achieved the highest overall average in the four required half courses in the first year of the Master of Science program of the School of Nursing. Selection will be made by the Graduate Program Committee of the School of Nursing. Value: $350

The Julio Arboleda-Florez and Heather Stuart Award
Established in March 2007 and revised in October 2015 by Drs. Julio E. Arboleda-Florez and Heather L. Stuart and awarded on the basis of academic achievement to M.Sc.,

M.P.H. or Ph.D. students enrolled in the graduate program in Epidemiology with a stated research interest in the field of mental health. The statement of research interest will be taken from the application to graduate studies materials, or, if not available in the application materials, solicited at the time of adjudication of the award in the form of a one page research interest statement from the student(s). Selection will be made by the Department of Public Health Sciences' Awards Committee by May 1. Value: variable.

The Kitty Noble Memorial Ontario Graduate Scholarship
Established in January 2014 in memory of Kitty Noble, Occupational Therapy 1974, by Stephen Sorensen, BCom 1976, with matching support from the Province of Ontario. Awarded on the basis of academic excellence to funding-eligible Master's or Ph.D. level students enrolled in the School of Graduate Studies, with preference given in the following order of priority:

(a) to students in the Master of Science in Occupational Therapy (M.Sc [O.T.]) program,
(b) to students in the PhD in Rehabilitation Science program who have a background in Occupational Therapy,
(c) to students in any other graduate program in the School of Rehabilitation Therapy.
Selection will be made by the Leadership Team of the School of Rehabilitation Therapy. The award will be administered in compliance with all OGS Program Guidelines.
Value: $15,000 maximum ($5,000 per term)

The Larry Gibson Graduate Fellowship
Established in January 2012 by Larry Gibson and awarded on the basis of academic excellence to funding eligible Masters or PhD level students enrolled in a Nursing program in the School of Graduate Studies, who have resided in Kingston, Ontario for not less than ten (10) years prior to attending the Graduate Nursing program at Queen's University. Preference will be given to students with a demonstrated research interest in palliative care. A one-page research summary must be submitted with the fellowship application/nomination materials. Selection will be made by the School of Nursing Graduate Studies committee. Value: variable.

The Latham Family Award in Social Neuroscience
Established in October 2011 by Ruth Hill and her children and awarded on the basis of academic excellence and/or research achievement to funding-eligible Master's or Ph.D. level students enrolled in Neuroscience Studies in the School of Graduate Studies. Preference will be given to students who are conducting research in Bullying, Behavioural or Addiction Research. Selection will be made by the Education and Training Committee of the Centre for Neuroscience Studies. Value: variable.

The Mary Joan Dolores Webber Nurse Practitioner Award
Established in March 2017 by Joan Webber and awarded on the basis of academic excellence to students enrolled in the Master of Nursing (Primary Health Care Nurse Practitioner) program in the School of Nursing. Selection will be made by the School of Nursing Graduate Program Committee. Value: $2,000

The Mary N. Francis Fellowship in Nursing Science
Established in 2015 by Gordon Francis and Eleanor Rivoire in memory of their mother (Mary N. Francis). Awarded to funding-eligible Master of Nursing Science (MNSc) students or PhD students in Nursing Science in the School of Graduate Studies, with preference given to MNSc level students in Year 1, or PhD level students in Years 1 or 2. Awarded on the basis of academic excellence coupled with personal attributes of compassion and caring for patients that defines the nursing profession and as practiced by Mary Francis, as determined by two letters of support from clinical colleagues who have worked in the last two years with the applicant. A student can hold the fellowship for more than one year if eligible. Selection will be made on the recommendation of the School of Nursing Awards Committee to the School of Graduate Studies. Value: variable.

The Mitchell and Wilda Andriesky Award
Established by Mitchell Andriesky (Arts '53) and Wilda Andriesky (Arts '59, M.A. '61) and awarded on the basis of demonstrated financial need and academic achievement to graduate students in the Department of Psychology with preference to a student in clinical child psychology. Applications are to be made to the Office of the University Registrar, Student Awards by 31 October. Value: variable.

The Nancy Simpson Scholarship in Genetics
Established in November 2004 by Nancy Simpson to recognize the best Masters or Ph.D. student at Queen's University studying in a field of genetics. Open to Master's and Doctoral students registered in the School of Graduate Studies in any graduate program or department at Queen's University whose research is in a field of genetics, including but not limited to molecular genetics, ethics in genetics, bioinformatics, behavioural genetics, evolutionary genetics and genomics. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition. Value: variable

Therapeutics, Drug Development, and Human Toxicology Alumni Fellowship
Established in April 1992 and revised in March 2015 with donations by alumni and friends of the graduate program in Pharmacology and Toxicology. Awarded on the basis of academic excellence to a graduate student(s) in the current Pharmacology and

Toxicology program or in the field of Therapeutics, Drug Development, and Human Toxicology in the Department of Biomedical and Molecular Sciences graduate program. The Field Coordinator for Therapeutics, Drug Development, and Human Toxicology will identify the successful candidate(s) in consultation with members of the staff, and make a recommendation to the School of Graduate Studies. Value: variable

The Phyllis Anne Elizabeth Whitaker Award
Established from the estate of Phyllis Anne Elizabeth Whitaker and awarded to a native student in a Master's or Ph.D. program in the School of Nursing, Faculty of Health Sciences, on the basis of academic excellence, and who has indicated a desire to serve for one year of professional care to native peoples in a community of native peoples. Value $1,700

The Physical Therapy Clinic Award in Ambulatory Care
Established by the Physical Therapy Clinic at Queen's University and awarded to a graduating student for excellence in ambulatory care as judged by the Physical Therapy faculty members. The student will be chosen on the basis of performance in both academic courses and clinical placement related to ambulatory care of musculoskeletal dysfunction. Value: variable.

The Physical Therapy Clinical Award for Fieldwork Performance in Occupational Therapy
Established by the Physical Therapy Clinic at Queen's University and awarded annually to two graduating students in the Occupational Therapy program for excellence in fieldwork performance as judged by the Occupational Therapy faculty members. The award will be based on the fieldwork performance report scores and preceptor feedback from all fieldwork placements. Value: variable.

The Physical Therapy Clinical Award in Rehabilitation & Continuing Care
Established by the Physical Therapy Clinic at Queen's University and awarded to a graduating student in Physical Therapy for excellence in rehabilitation and/or continuing care as judged by the Physical Therapy faculty members. The student will be chosen on the basis of performance in both academic courses and clinical placements related to rehabilitation and/or continuing care of major physical dysfunction. Value: variable.

The Physical Therapy Graduation Prize
Established by Catherine Walker, B.Sc. P.T. 1980, M.Sc. 1999 (Rehabilitation Science) and awarded to a graduating Physical Therapy student on the basis of outstanding involvement in extra-curricular activities in the Queen's community, including sports,

and academic achievement. Students may be nominated for this award by their peers. Nominations should be submitted to the Chair of the Physical Therapy Program by 1 September. Value: $100.

The Professors' Award for Outstanding Graduate Work in Anatomy
Awarded to a graduate student in the second or subsequent years of study in the current graduate program in Anatomy and Cell Biology or in the Anatomical Sciences degree program, or in a research Master's or PhD degree whose research relates to anatomical sciences including gross anatomy, neuroanatomy, histology and embryology, in the Department of Biomedical and Molecular Sciences. The recipient must demonstrate outstanding performance in research and course work. Consideration will also be given to teaching and extracurricular activities. Students must be nominated by their supervisor and can win only once in each degree program. Selection will be made by a committee consisting of the Department Head, Coordinator of Graduate Studies and two faculty members who teach Anatomy courses. Deadline for nominations is 1 April and the winner will be announced by 1 June. Value: variable.

The R.W. Leonard Prize in Occupational Therapy
Awarded on the basis of academic excellence to a student entering the final professional year of the Occupational Therapy Program in the School of Rehabilitation Therapy. Value: variable.

The R.W. Leonard Prize in Physical Therapy
Awarded on the basis of academic excellence to a student entering the final professional year of the Physical Therapy Program in the School of Rehabilitation Therapy. Value: variable.

The Rehabilitation Therapy Society Scholarship in Occupational Therapy
Established in May 2017 by the Rehabilitation Therapy Society of Queen's University and awarded to funding-eligible Master's level students enrolled in year 2 of the Occupational Therapy program in the School of Graduate Studies who embody the values and best exemplifies all the roles and competencies of occupational therapy in Canada. Selection will be made by the Student Progress and Awards Committee for the Occupational Therapy Program. Value: $1,250

The Rehabilitation Therapy Society Scholarship in Physical Therapy
Established in May 2017 by the Rehabilitation Therapy Society of Queen's University and awarded to funding-eligible Master's level students enrolled in year 2 of the Physical Therapy program in the School of Graduate Studies who embody the values and best exemplifies all the roles and competencies of physical therapy in Canada.

Selection will be made by the Student Progress and Awards Committee for the Physical Therapy Program. Value: $1,250

The School of Nursing 55th Anniversary Award
Established from Alumni donations, this fund provides financial assistance to graduate students for travel to conferences to present their research findings. Awarded to students in the Master of Science or Doctoral programs in the School of Nursing. Application forms to be submitted to the Graduate Program Committee. Value: variable

The Susan Elizabeth Phillips Scholarships in the School of Medicine (MD/Graduate Students)
Established by the Estate of Susan Elizabeth Phillips and awarded on the basis of academic excellence to funding-eligible graduate students enrolled in a Master's or PhD program in the School of Graduate Studies and concurrently enrolled as an undergraduate student in the School of Medicine. Selection will be made by the School of Medicine Awards Committee. Value: variable

The TD Bank Financial Group Graduate Fellowship in Arctic Environmental Issues
Established in March 2009 by TD Bank Financial Group and awarded to funding eligible Master's or PhD level students pursuing research work in environmental issues that are of practical relevance to the Arctic region. The fellowship will provide travel and stipend support for graduate students to continue critical field research within the Arctic. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition. A one-page research summary must be submitted with the application materials. Value: variable.

The Thomas J. Zakos Graduate Award in Nursing
Established in memory of Thomas J. Zakos by his daughters Margaret Zakos, BNSc 1969, Maria Zakos, BA(Hons) 1966. Awarded on the basis of academic excellence to funding eligible Master's or PhD level students enrolled in a Nursing program in the School of Graduate Studies. Preference will be given to students with a demonstrated clinical or research interest in mental health and addictions. A one-page clinical studies summary or research summary must be submitted with the fellowship application/nomination materials. Selection will be made on the recommendation of the School of Nursing Awards Committee to the School of Graduate Studies.

The Torrible Goldman Sachs Scholarship
Established in February 2011, by Goldman Sachs Gives and awarded to an eligible full time student in the Master of Science (Physical Therapy) (M.Sc.[P.T.]) program in the School of Graduate Studies. Preference will be given first to a student who self-

identifies as the child of immigrant parents (both parents born outside of Canada. If a suitable recipient cannot be found under this criterion, preference will be given to a student from a remote or rural area of Canada. Awarded on the basis of good academic standing, and good communicative and interpersonal skills. The Fellowship is renewable for a second year provided good academic standing and full time status are maintained. Selection will be made by the Admission Committee in the School of Rehabilitation Therapy/ Master of Science Physical Therapy program. Value: variable; one award of $14,000 per annum

The Tracey Gourlay Memorial Scholarship
Established by family and friends in memory of Tracey Gourlay, a Master's student in Rehabilitation. This scholarship will be awarded annually to a full-time graduate student in Rehabilitation Science on the basis of academic excellence in their graduate coursework and their contribution to graduate life. Value: $500.

Transforming Lives Scholarship
Established in March 2018 by Andy Wang, BSc 1983 (Physical Therapy). Awarded on the basis of academic achievement to eligible Master's students entering Physical Therapy or Occupational Therapy in the School of Graduate Studies, with preference given to students who self-identify as having a physical disability. Selection will be made by the Student Progress and Awards Committee for the Physical and Occupational Therapy Programs. Value: Variable (Minimum $1,000 each for up to 5 students/year)

The Violet Head Fellowship
Established from the estate of Dr. Violet Beryl Head. Awarded on the basis of merit and need to the female Ontario resident completing the Clinical M.A. program with the highest standing, who is proceeding to a doctoral degree in clinical Psychology at Queen's or another well-recognized university in North America, Great Britain, or Continental Europe. The student must not receive any other award of higher value. A committee appointed by the Head of the Department makes the selection each spring. The scholarship may be renewed, normally up to a maximum of twice, provided that satisfactory standing has been maintained. Value: variable

For Students in Natural or Applied Sciences

The 1960's Chemistry Scholarship
Established in January 2010 by members of the chemistry classes of the 1960's to acknowledge the outstanding education they received in the Department of Chemistry at Queen's University and to commemorate the wonderful teachers they had in their

years in the Department of Chemistry at Queen's. Awarded to a funding-eligible Master's or PhD student, who is a Canadian citizen or permanent resident, enrolled in the first year of the graduate program in Chemistry at Queen's University. The recipient must be deemed to be the best applicant to the graduate program in the department in the current application/admission cycle, as determined by the Chemistry Graduate Admissions Subcommittee or any successor subcommittee, based on the strength of the applicant's academic record and letters of recommendations. Value: $2,500

The Bert Wasmund Scholarship for Sustainable Energy Research
Established in November 2006 by Dr. Bert Wasmund, B.Sc. 1961; M.Sc. 1963; Ph.D. 1966 (U of T), and Dr. Eric Wasmund, B.Sc. 1988; Ph.D. 2005 (McMaster) and awarded to an eligible graduate student in a Master's or Doctoral research degree program in Engineering and Applied Sciences of the School of Graduate Studies at Queen's University whose stated research area is studying sustainable energy research. Preference will be given to candidates who are engineering graduates from a Canadian University included in the Association of Universities and Colleges of Canada. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition. Selection will be based on academic achievement and a demonstrated commitment to the development of sustainable energy technologies. Value: variable.

The Carl Reinhardt Fellowships
A number of Reinhardt Fellowships in varying amounts are awarded annually to graduate students in the Department of Geological Sciences and Geological Engineering and the Department of Physics, Engineering Physics and Astronomy.

The Department of Geography Graduate Awards for Exceptional Merit
Established in January 2001 by an anonymous donor to the Department of Geography at Queen's University. Awarded to five to seven full-time graduate students who have been admitted to a Master's or Ph.D. program in the Department of Geography on the basis of academic excellence, and meaningful research and study. Value: $2,000 to $3,000

The Department of Geography Graduate Fellowship
Established in January 2001 by an anonymous donor to the Department of Geography at Queen's University. Awarded to a full-time graduate student in the Department of Geography on the basis of academic excellence, and meaningful research and study. This Fellowship will be awarded annually to a graduate student pursuing a Ph.D., M.Sc. or M.A. Value: minimum of $15,000.

The Dorrance Family Award
Awarded on the basis of excellence in scholarship and/or research, to a full time funding-eligible graduate student enrolled in a graduate program in an area in Science and Technology with preference given to Mathematics and Statistics. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition.

The E.C. Speers Fellowship in Geological Engineering
Established by Mrs. Iva Speers in memory of her husband, Al Speers (Ph.D. '56). Al Speers was one of Canada's most promising geological scientists and this fellowship recognizes his excellence in learning, research and education. The E.C. Speers Fellowship in Geological Engineering will be awarded to the graduate student with a first-class standing and who is judged by the Department of Geological Sciences and Geological Engineering to have the best research proposal after the first year of graduate work. Value: variable.

The F.E. Smith Award in Communications Engineering Theory
Established by Frank E. Smith, who was instrumental in the establishment of research in communications engineering theory at Queen's University in the early 1960's. The award will be presented to a graduate student in the Department of Electrical and Computer Engineering or in the Department of Mathematics and Statistics, entering a program where the thesis research will be in communications engineering theory. Value: variable

The Fondation J. Armand Bombardier Humanitarian Engineering Fellowship
Established in November 2008 by Fondation J. Armand Bombardier and awarded to a funding-eligible graduate student in the Department of Civil Engineering at Queen's University. Awarded to a student pursing humanitarian efforts through engineering. Awarded on the basis of above average academic achievement and exceptional interest in helping disadvantaged communities around the world. The purpose of this fellowship is to place students with partner organizations all over the world to help establish or develop sustainability projects. Selection will be made by the Graduate Studies Committee in the Department of Civil Engineering. Application to be made to the graduate coordinator in the Department of Civil Engineering by March 1. Value: variable.

The Geoffrey and Shelagh Ballard Award for Sustainable Energy Engineering
Established in October 2013 by Shelagh Ballard, B.A. 1956, and awarded on the basis of academic excellence to funding-eligible Master of Applied Science (M.A.Sc.) or Ph.D. level students who are Canadian citizens or Permanent Residents enrolled in

Engineering and Applied Science in the School of Graduate Studies. Applicants must have a demonstrated research interest in the area of sustainable engineering, with a focus on energy, where the goal is to help society move from a gasoline based economy to a hydrogen based economy, through the innovative application of science and engineering. A one page research summary must be provided as part of the application process. Selection will be made by the Fellowships Committee of the School of Graduate Studies through the annual internal fellowship competition. Value: variable.

The G.E. Ted Courtnage Graduate Award in Engineering
Established in October 2006 by Dorothy Courtnage in memory of her husband G.E. Ted Courtnage, B.Sc. 1956, and awarded on the basis of academic achievement to full-time funding eligible graduate students in any year of study in Engineering and Applied Science in the School of Graduate Studies. Application should be made to the School of Graduate Studies by the annual internal fellowship competition deadline, normally in early April Value: variable.

The G. Neilson Whyte Memorial Fellowship
Established by his family and friends in memory of G. Neilson Whyte, a distinguished graduate of Queen's University and a member of the Department of Physics from September 1958 until his death in 1963. A resident fellowship is awarded annually to the outstanding graduating student with first-class honours in either Honours Physics in Arts and Science or Engineering Physics in Applied Science at Queen's University, or secondly, to a first-class honours graduate of another university, for postgraduate work in the Department of Physics. Value: variable

The George C. Bateman Memorial Fellowship
A bequest by the late George C. Bateman to provide graduate fellowships to students in Mining Engineering. Three awards are available annually. Value: variable

The George Tsikos Award
Established by Smaro Skoulikidis-Tsikos in memory of George Tsikos, M.Sc. '87. Awarded annually on the basis of academic merit and on the recommendation of the Head of the Department and Graduate Coordinator to a student from a developing country, as defined by the United Nations of CIDA, pursuing a graduate degree in Geological Sciences. Value: variable.

The Harold M. Cave Graduate Travel Scholarship
Established in 2015 by estate of Harold M. Cave, B.A.1925, M.A. 1926 and awarded on the basis of academic excellence to funding-eligible Master’s or Ph.D. level students enrolled in the Department of Physics, Engineering Physics and Astronomy, in the

School of Graduate Studies. The award will be used to support travel, conference, and field work expenses related to the student's research. Selection will be made by the Departmental Awards Committee (or equivalent). Applicants are to submit a letter of application to the Department of Physics, Engineering Physics & Astronomy by 28 February. Value: variable.

The Harry Isaacs Memorial Graduate Scholarship
Established in October 2005 by a bequest from the estate of Mary L. Isaacs, B.A. 1950 in memory of her brother Harry Isaacs, and awarded to eligible full-time funding graduate students in Mining Engineering. Selection will be made by the Graduate Studies Committee, Department of Mining Engineering. Value: variable

The Ian M. Drum Scholarship
Founded by Ian M. Drum, Science '37, and awarded on the basis of academic excellence to funding-eligible Master's or Ph.D. level students enrolled in Engineering and Applied Science in the School of Graduate Studies who have a demonstrated interest in a project with potential for commercial applications. Preference will be given to students who have taken some courses in either the humanities, social sciences, law or business as part of their postsecondary education at the time of application or who are enrolled in a program where innovation and commercialization are key aspects of the curriculum. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition. Value: variable.

The Ian A. Macleod Award
Established by friends, colleagues and students in memory of Professor Ian A. Macleod, who was a member of the Department of Computing and Information Science from its inception in 1969 until 1995. To commemorate his belief in the importance of a strong departmental spirit, the award is granted in the fall to the graduate student who made the greatest contribution to the intellectual and social spirit of the Department of Computing and Information Science during the preceding academic year. The recipient is chosen on the basis of a recommendation made by a committee formed by the Head of the Department. A plaque bearing the names of the recipients is on display in the department. Value: variable.

The Irene MacRae Memorial Graduate Award
Established in October 2005 by her children, grandchildren and great-grandchildren in memory of Irene MacAllister MacRae, Arts '14, who was vice-president of the Mathematics Club while at Queen's, and was one of the first female graduates in Mathematics and Statistics at Queen's University. Awarded on the basis of academic achievement to an eligible graduate student in the Physical Sciences, with preference

given to female students in Mathematics and Statistics. Selection will be made by the Fellowship Committee of the School of Graduate Studies. Value: variable

The J. J. Denny Memorial Fellowship in Mining Engineering
Established from the sale of gold nuggets donated by Mrs. J. J. Denny in memory of James Denny, M.Sc. '21 and awarded on the recommendation of the department to a graduate student in mining engineering. Value: variable

The James H. Rattray Scholarship in Economic Geology
A scholarship, approximate value $250, founded by Major James H. Rattray, MC, is awarded on the basis of standing in fourth year economic geology to a student in the Faculty of Arts and Science or Applied Science who is registered for graduate work in the following year. Value $250

The Maria Nathanson and IAMGOLD Corporation Graduate Scholarship in Geological Sciences and Geological Engineering
Established in October 2004 in honour of Maria Nathanson, spouse of the co-founder of IAMGOLD Corporation, Mark Nathanson, and awarded to a graduate student in the Master's program in the Department of Geological Sciences and Geological Engineering at Queen's University. Priority will be given to those students with an interest in enrolling in the course-based Mineral Exploration Program (MinEx) and who have good professional recommendations. Students accepted for a qualifying year are eligible. Preference will also be given to citizens of Mali, Ghana, Senegal, Tanzania, Botswana, Ecuador, Peru, French Guiana or Suriname. Selection will be made by the Department of Geological Sciences and Geological Engineering. Application in writing should be made to the Head of the Department of Geological Sciences and Geological Engineering by 15 March, for consideration for admission the following September. Value: full graduate tuition and student fees.

The McAdie Chemistry Doctoral Student Award
Established in March 2006 by Dr. Harry McAdie, M.A. 1954, Ph.D 1956, in memory of his supervisor, Professor Grenville B. Frost, teacher, mentor and friend. Dr. McAdie received the first Ph.D. in Chemistry at Queen's University in 1956. Awarded on the basis of academic merit to a student enrolled in the first year of the Doctoral program in Chemistry at Queen's, who obtained a baccalaureate degree at a Canadian university. Preference will be given to Canadian citizens or permanent residents. Value:$1,000

The Mel Williamson Fellowship
Established by the Mel Williamson Foundation and awarded in alternate years to a graduate student in the Department of Mining Engineering and the Department of

Geological Sciences and Geological Engineering. Awarded on the basis of academic excellence with consideration given to leadership ability, civil responsibility and/or athletic ability. Selection will be made by a committee comprised of representatives from each department. Value: $4,500.

The Mel Williamson Lectureship Fund
Established by the Mel Williamson Foundation and offered in alternate years to the Departments of Mining Engineering and Geological Sciences and Geological Engineering to invite guest lectures. Each department will make their own selection of invited speakers. Value $1,000

The Michael A. Jenkins Graduate Fellowship in Computer Science
Established in October 2004 by an anonymous donor in honour of Dr. Michael A. Jenkins and awarded on the basis of outstanding academic achievement and/or research to a full time student in either the Master's or Doctoral program in the School of Computing. Application must be made by letter to the Graduate Coordinator in the School of Computing. Value: variable.

The Milton Hersey Fellowship in Chemistry
A fellowship, endowed by Milton L. Hersey, M.Sc., LL.D., of Montreal, is awarded annually to a graduate of a university or technical college who will carry on research for the whole session and embody the results in a thesis. Value: variable.

The Norman and Grace Miller Graduate Fellowship in Mathematics
Established in November 2013 by Drs. Alfred and Isabel Bader, in memory of Norman Miller, Queen's Math professor and beloved teacher from 1919 until 1959, and his wife, Grace. Awarded on the basis of academic excellence to funding-eligible Master's or Ph.D. level students enrolled in Mathematics and Statistics in the School of Graduate Studies. Selection will be made by the Department of Mathematics and Statistics. Value: $8,000 approx.

The Paul D. D. Chick Memorial Scholarship
A scholarship established in memory of Paul D. D. Chick, M.Sc. '80, is awarded annually on the recommendation of the Head of the Department to a promising graduate student registered in the Department of Mining Engineering. Value: variable.

The Modular Mining Graduate Award
Established in May 2018 by Modular Mining Systems Inc. and awarded on the basis of academic excellence to funding eligible research Masters or PhD level students enrolled in the Robert M. Buchan Department of Mining. Preference will be given to students

pursuing research in the fields of Mining Optimization, Automation, Technology, and/or Innovation. The applicants will be required to submit a brief proposal of their research project and principal objectives. Selection will be made by the Departmental Graduate Studies committee/similar group. Value: variable.

The R. T. Mohan Graduate Scholarship in Chemistry
Awarded annually to a promising student engaged in full-time graduate work. Value: $1,000

The R. S. McLaughlin Teaching Fellowships in Mechanical Engineering
Fellowships were established by the late R. S. McLaughlin, LL.D., of Oshawa, for students proposing to do graduate work in mechanical engineering at Queen's University. One fellowship is available. Value: variable

The Robert J. Mitchell Prize
Established in 2001 in honour of Dr. Robert Mitchell and awarded to a full-time thesis stream graduate student in the School of Graduate Studies, Department of Civil Engineering. The candidate must demonstrate leadership ability, either within the university or in extra-university activities. This can include, but is not limited to, involvement in such activities as: mentoring, volunteering, intramural and extramural sports participation, student design teams, other student teams or clubs. The candidate will be chosen by representatives of the Department of Civil Engineering. Value: $5,000

The TD Bank Financial Group Graduate Fellowship in Arctic Environmental Issues
Established in March 2009 by TD Bank Financial Group and awarded to funding eligible Master's or PhD level students pursuing research work in environmental issues that are of practical relevance to the Arctic region. The fellowship will provide travel and stipend support for graduate students to continue critical field research within the Arctic. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition. A one-page research summary must be submitted with the application materials. Value: variable.

The Thurber Engineering Graduate Scholarship
Established in 2014 by Thurber Engineering Ltd. and awarded on the basis of academic excellence to funding-eligible Master's or Ph.D. level students enrolled in Civil Engineering in the area of geotechnical engineering conducting research on landslides. Selection will be made by the Department of Civil Engineering Scholarship Selection Committee. Value: one award of $25,000 or two awards of $12,500

The U.S. Steel Canada Graduate Fellowship

Established by U. S. Steel Canada and awarded on the basis of academic excellence to funding-eligible Master's or PhD level students enrolled in the School of Graduate Studies in the area of mechanical and materials engineering with a specialization related to steel. Selection will be made by the Fellowship Committee of the School of Graduate Studies through the annual internal fellowship competition. Value: variable.

The W. W. King Graduate Fellowships
Six awards, total value $4,500 each, are made annually to students studying for the M.A.Sc. degree at Queen's University. Value: $4,500

The William Neish Fellowship in Chemistry
A fellowship, endowed by Ada E. Neish and Laura Neish Black of Kingston, is awarded annually to a university graduate who will carry on research work for the whole session and embody the results in a thesis.Value: variable.

The William Patrick Doolan Award in Chemistry
Awarded annually on the recommendation of the Head of the Department to the graduate student who contributes the most to demonstrating in the first year chemistry laboratories. Value: $500

The Woeller Graduate Award in GeoEngineering
Established in May 2006 and revised in October 2017 by David Woeller, B.Sc. 1978 (Civil Engineering), and awarded on the basis of academic excellence to funding eligible Masters or PhD level students enrolled in the GeoEngineering program. Preference will be given to students with a demonstrated interest in site investigation and soil characterization. Selection will be made by the Departmental Graduate Studies committee or similar group. Value: variable.

The Xiaoting Liu Memorial Award
Established by friends and colleagues of Xiaoting Liu (1962-1995) in the Department of Chemical Engineering, in her memory as a dedicated researcher, and as an individual with a great sense of humanity and humility. Awarded annually by the Department of Chemical Engineering to a graduate student in the Department who has, through her/his kindness and personal efforts, enhanced the quality of the teaching and learning environment for students in the Department. Applications and nominations for this award will be evaluated by the Coordinator of Graduate Studies and the Head of Department in consultation with graduate students in the Department.

RESEARCH ASSISTANTSHIPS

Faculty who are engaged on extensive research programs and who are holders of major research grants usually require, as assistants, several graduate students who are working in a field of study related to that of the research program.

Time spent on such research will normally be accepted as part of the academic requirements for the student's degree program.

Holders of major merit awards may not receive further assistance from a research grant that is from the same granting agency as the award.

Financial support that is provided through a research contract may contain terms and conditions that will obligate the student, as a participant, to act in accordance with the research agreement signed with the sponsor. If students have concerns about this kind of financial support, they should contact the department/program graduate coordinator.

University Research Services (URS) provides a range of advice and administrative support services for Queen's University researchers. For more information, see the University Research Services website.

TEACHING ASSISTANTSHIPS

Most graduate departments/programs engage several graduate students each year to assist in undergraduate teaching, tutorial work, and laboratory demonstrating, as Teaching Assistants (TAs).

At Queen's University, TAs are unionized members of the Public Service Alliance of Canada (PSAC). The collective agreement is posted on the Faculty Relations Office website.

The Centre for Teaching and Learning (CTL) provides programming, resources and support for graduate students' and post-docs' development as educators.

NON-COMPETITIVE AWARDS AND LOANS

Government-sponsored Financial Assistance Programs

Each province in Canada has financial assistance available on need-assessment basis for post-secondary study. These government aid programs are the major source of funds for students who have limited financial resources; however, government aid programs

are based on the assumption that it is primarily the responsibility of the student and their parents or spouse to provide for post-secondary education. In this province, the Ontario Student Assistance Program (OSAP) combines assistance available through the Canada Student Loan Plan and the Ontario Student Loan Plan. The amount of loan under the (OSAP) program, which is determined by the provincial government, takes into consideration the financial resources of the student and their parents or spouse. No interest or principal payments are required on the Canada or Ontario Student Loan while the student is in full-time attendance at an approved post-secondary institution. Interest charges during this period are paid by the federal and provincial governments. After the interest free period, interest charges begin to accrue on the unpaid balance of all consolidated loans. Ontario residents who may qualify for (OSAP) may obtain paper application forms and further information from the Office of the University Registrar (Student Awards), Queen's University or the Ministry of Advanced Education and Skills Development, Student Support Branch, P.O. Box 4500, 189 Red River Rd., 4th Floor, Thunder Bay, Ontario, P7B 6G9 after 1 April. Completed application forms should be forwarded to the Office of the University Registrar (Student Awards), Queen's University, Kingston, Ontario K7L 3N6. It is strongly recommended that paper applications reach the Student Awards Office prior to 1 July. Information and application is also available on the internet at the following address: http://osap.gov.on.ca Non-residents of Ontario must apply to their own province for any provincial aid that may be available.

Work Study Program

The Work Study program is offered to provide students with demonstrated financial need with the opportunity to receive priority for certain part-time jobs during their studies. The Work Study Program is a need-based program, meant to supplement, not replace, government student assistance, student and family contribution. Students must demonstrate a financial need over resources available to them in order to be eligible for the program. More information and application materials are available from the Student Awards Office website

Financial Assistance for Students With Disabilities

There is a range of financial assistance and services available to students with disabilities at Queen's. For more information, see the website of the Office of the University Registrar (Student Awards).

Part-time Canada Student Loan/Special Opportunity Grant Program (PTCSL/SOG)

In order to be eligible for a Part-time Canada Student Loan/Special Opportunity Grant, you must be a Canadian citizen or permanent resident of Canada, as well as a resident of a province or territory that participates in the Canada Student Loans Program. You may take a maximum 40% course load (1.0 credits per term). (Graduate students must be part-time.) This part-time program only considers direct educational costs (i.e., tuition, compulsory fees, books, etc.); there is no assistance to cover living expenses. The government has outlined the maximum total family gross income and assets per family size a student must meet in order to qualify for assistance. The maximum amount of loan available is $4,000. These loans are not interest-free. In order to qualify for the Special Opportunity Grant you must meet the government's target group for part-time studies (i.e., you are a sole support parent with children under the age of 11, you are disabled, you are restricted by the university to part-time studies, etc.). The maximum amount of grant assistance available is $1,200 per year (May to April). Applications are available in the Office of the University Registrar (Student Awards).

Special Opportunity Grants and Loans

Students who are unable to study full-time and who have low income may be eligible for this assistance. Students who qualify are assessed grant assistance first; the remaining assessed need is issued as a loan. Students must be Canadian citizens or permanent residents who live in a province or territory that participates in the Canada Student Loans Program. Students must be qualified to enrol in a program leading to a degree, diploma or certificate. Students must enrol in between 20 and 59 of a full-time course load. Students must begin to make interest payments on the loan 30 days after it is cashed. Interest relief may be available in some cases. Applications are available at the Student Awards.

Queen's University Student Loan Funds

Queen's University, its graduates and friends have established a number of loan funds for the assistance of undergraduate and graduate students. Loans are made on the basis of financial need, academic merit, and general integrity. An applicant for a University loan must have obtained a minimum average of 55 percent in the session immediately prior to application. Short term loans of ninety days or less may be granted to students who are temporarily in need of funds and who can produce satisfactory evidence that they will have sufficient money to make payment on or before the due date. A service charge of 2 per cent of the principal amount (minimum $5) is charged at the time the loan is obtained. No other interest or service charges accrue so long as the loan is not allowed to become overdue. General or long term loans can be available for students who require assistance for more than ninety days. Before financial assistance is given,

the loan committee must be satisfied that the applicant has applied to all other eligible sources of aid. The interest rate on general loans is the same as the bank rate the University is able to obtain for itself, and the interest is compounded monthly. Students will be advised of the interest rate in effect at the time application is made. Interest rates will be set on 30 September each year and the new rate will apply to all outstanding loans. Repayment of long-term loans must normally be made by 30 September following the date on which the loan was granted. Year by year extensions of the due date may be negotiated between the borrower and the Associate University Registrar (Student Awards) while the borrower continues to be a full time student at Queen's University. Another loan for the next year may be granted if the student applies and justifies the need. Students contemplating an application for university loan assistance should determine their income and expenditures for the session and apply at least two weeks in advance of the actual need. Application for a university loan should be made at the office of the Associate University Registrar (Student Awards), Gordon Hall or applications are available on the Student Awards Office web page.

MATERNITY/PARENTAL LEAVE FUNDING

Established in January 2011, the School of Graduate Studies (SGS) provides Maternity/Parental Leave Funding for doctoral students. These funds are intended to support a new parent who takes a leave from full-time graduate study to start or expand their family.

The SGS will provide $5,000 to funding-eligible Ph.D. students who have been granted maternity or parental leave under the Maternity and Parental Leave regulation.

Eligibility criteria for Doctoral Student Maternity/Parental Leave Funding are as follows:

1. The student must have been registered as a full-time doctoral student for at least one term to qualify for this funding.
2. The student must be a full-time student in year 1, 2, 3 or 4 of their doctoral degree program at the time of the maternity/parental leave to qualify for this funding.
3. For students who hold Tri-Agency funding support (CIHR, NSERC, and SSHRC) for maternity/parental leave, or who receive benefits for maternity/parental leave through an employment relationship, the amount of the Graduate Student Maternity/Parental Funding will be discounted accordingly.

4. To receive this funding, the student must take the maternity/parental leave during the first year of the child's life or, in the case of adoption of a child, within 12 months after the child first comes into the custody of the parent.
5. The funding will be paid in one instalment near the beginning of the first term of a one term maternity/parental leave, or near the beginning of each of the first two terms of a maternity/parental leave that is longer than one term. Payment will be made via the normal SGS award payment methods.
6. A student may apply for and receive the Graduate Student Maternity/Parental Leave Funding no more than two times during their Ph.D. program. All eligibility criteria must be met each time. Students who receive two Maternity/Parental Funding payments in the amount of $5000 each, for a leave that is longer than one term, have been granted their full entitlement of this funding.
7. Students must indicate that they wish to be considered for this funding by completing the relevant section(s) of the Maternity/Parental Leave Request Form.

All terms and conditions of the SGS Maternity and Parental Leave regulation apply.

COURSES OF INSTRUCTION

LINKS TO PAGES IN THIS SECTION

- Aging & Health
- Anatomy & Cell Biology
- Applied Sustainability
- Art Conservation
- Art History
- Arts Leadership & Arts Management
- Biochemistry
- Biology
- Biomedical & Molecular Sciences
- Biomedical Engineering
- Biomedical Informatics
- Chemical Engineering
- Chemistry
- Civil Engineering
- Classics
- Computational Science & Engineering
- Computing
- Cultural Studies
- Earth & Energy Resources Leadership
- Economics
- Education
- Electrical & Computer Engineering
- English Language & Literature
- Environmental Studies
- French Studies
- Gender Studies
- GeoEngineering
- Geography & Planning
- Geological Sciences & Geological Engineering
- German Language & Literature
- Global Development Studies
- Health Quality
- History
- Industrial Relations
- Kinesiology & Health Studies
- Law
- Management - School of Business
- Mathematics & Statistics
- Mechanical & Materials Engineering
- Medical Sciences
- Microbiology & Immunology
- Mining Engineering
- Neuroscience
- Nursing
- Occupational Therapy
- Pathology & Molecular Medicine
- Pharmaceutical & Healthcare Management and Innovation
- Pharmacology & Toxicology
- Philosophy
- Physical Therapy
- Physics, Engineering Physics & Astronomy
- Physiology
- Policy Studies (Public Administration)
- Political Studies
- Protein Function Discovery
- Psychology
- Public Health Sciences
- Rehabilitation & Health Leadership
- Rehabilitation Science
- Religious Studies
- Sociology
- Translational Medicine
- Urban & Regional Planning

AGING AND HEALTH

Courses listed below represent the range of Aging and Health (AGHE) graduate course offerings in the School of Rehabilitation Therapy. Not all courses will be offered in each academic year and the current calendar should be consulted for the term and instructor. The Aging and Health program offers 3.0 credit-unit 'term' courses.

NOTE: All AGHE- 900 level courses will normally be open only to Ph.D. students.

AGHE-800* Evaluating Aging-Related Programs and Services
This course introduces learners to evaluation principles and practice as applied to programs that address social, physical and economic determinants of wellness and participation for older adults. Learners will acquire skills necessary to identify and apply program evaluation methods to inform ongoing program development. Topics will include theoretical aspects of program evaluation, as well as strategies for program development, monitoring and change with a focus on participatory approaches. Current debates in the field will be discussed, with particular attention to issues underlying research and evaluation with older adult populations in community and institutional contexts. Attention will be given to knowledge mobilization strategies that foster inclusion, empowerment and innovation. Winter.

AGHE-802* Ethics and Bioethics of Aging
This course will explore ethical issues arising in the wellbeing and care of aging adults. Aspects of three streams of ethics will be addressed: professional ethics, organizational ethics, and biomedical ethics, as these streams relate to wellbeing and aging. Issues that will be addressed include: the organizational importance placed on aging adults, moral distress, advance directives, consent, values, and the ethics of wellbeing. Fall.

AGHE-803* Demography and Geography of Aging
This course surveys the latest literature on the demography and geography of aging highlighting the latest census and survey data from Statistics Canada and international sources. Attention is placed on the underlying demographic factors and socio-economic characteristics of population aging and how issues like fertility, mortality, morbidity, life expectancy, mobility and immigration are changing the demography of the older population in Canada and internationally. Emphasis is also placed on how demographic and socio-economic characteristics of population aging result in complex and uneven geographies of aging at various scales from neighbourhood to international comparisons.

AGHE-804* Health and social systems for older adults
Health and social systems for older adults are amongst the most complex in many societies. They include parts or all of the primary care, acute care, chronic care, palliative care and home care systems, and rehabilitation services on the health provision side. On the social systems side, they include parts of the transportation, social housing, social work and legal systems. The complexities of health and social systems for older adults are the foci of this course and are examined through a review of the literature mainly with an emphasis on the health and social systems for older adults in Canada.

AGHE-810* Epidemiology of Aging
Students are introduced to an overview of the core principles central to the epidemiology of aging, with an emphasis on health and disease processes in older adults. Essential epidemiologic design/analytic issues and common themes of age-related factors and disease are addressed. Topics include: definition and measures of disease, application of cohort and experimental studies to aging, bias and confounding arising from the process of aging, causal inferences, and special topics on aging.

AGHE-811* Normal Aging Processes
This course will differentiate normal from abnormal aging and examine the theories, models and strategies for healthy aging in Canada. These principles will be studied through a mix of online and group learning activities in the context of a variety of health concerns related to aging and with respect to individual and community action and public policy. Fall.

AGHE-812* Religion, Spiritual Health and Aging
Spiritual well-being is a defining aspect of healthy aging. This course will pay attention to the spiritual challenges as well as resources that come with aging. The following topics are addressed with attention to their complexity: mortality, loss and grieving, dementia, developmental theory and faith, religious participation, the relevance of diverse faiths and culture, and ultimate questions of meaning. Christian, Jewish, Muslim, Hindu and Buddhist perspective will be included. Participant will have the opportunity to explore listening skills, self-awareness, and relational dynamics such as transference, as these relate to the course.

AGHE-814* Mobility and functioning amongst older adults
In this seminar course students will gain knowledge on psychosocial and physiological risk factors for and consequences of age-related decline in mobility and physical function. Indicators of functional health in aging population will be discussed. Self-reported and performance-based assessment tools of mobility and physical function

designed for older population will be critically evaluated. The disability associated with age-related decline in mobility and physical function will be discussed with respect to incidence, prevalence, possible interventions and economic impact.

AGHE-815* Chronic conditions and self-management
This course provides an overview of strategies to support and help older people develop skills to manage the challenges of living with chronic health conditions. Specific approaches to health promotion and disease prevention will be addressed.

AGHE-816* Pharmacology and Aging
The focus of this course is an overview of basic pharmacokinetic and pharmacodynamic processes and how these are altered with advancing age. An emphasis is placed on assessment of risk, commonly prescribed medications in the elderly population, and strategies to optimize polypharmacy and medication-related problems.

AGHE-818* Rethinking Aging and Dying
This course will seeks to question widespread approaches to aging, terminal illness and death by exploring alternative ways of addressing these realities through artistic and literary media (literature, film, painting), that is through examples that challenge current notions, assumptions and understandings through which we approach and define aging and the end of life.

AGHE-819* Planning for Age Friendly Communities
This course will introduce students to the environmental conditions and policy contexts that create or impede opportunities for healthy aging at the local level. Applying a determinant's of health perspective, various dimensions of age friendly communities will be examined, such as community design, housing, transportation and mobility, recreation, social and civic participation, and social inclusion.

AGHE-820* Developing educational resources for older adults
This course is designed to provide learners with the opportunity to integrate theory, practice, and evidence in order to develop competency in the design and delivery of educational resources for older adults. Learners will build on their prior knowledge, collaborate to analyze and evaluate current resources in a variety of health care settings, and design client-centered resources that empower older adults.

AGHE-821* Aging and Mental Health
This course examines the interface between mental health and healthy aging. Students will examine theories of mental health and aging, the mind-body connection, and approaches to optimize cognitive vitality and psychosocial well-being. The course will

address common mental health conditions associated with aging, and explore issues related to these conditions.

AGHE-830* Legal Considerations in Aging and Health
Legal Considerations in Aging and Health introduces students to the effect laws, professional practices, and personal attitudes have on aging and health. Students will apply legal theory and research tools to evaluate issues of ageism, capacity and consent, elder abuse, professional responsibilities, the social determinants of health, and the engagement of older adults with the healthcare system.

AGHE-898* Master's Project
Students will develop research skills to search for evidence on a clearly defined question related to aging, methods for the critical appraisal of the evidence retrieved on the issue under investigation and skills in integrating the existing evidence. The course will include discussion, seminar presentations, and will culminate in a final research paper.

AGHE-900* Qualitative Research Methods
The course will cover the philosophical traditions that have guided the development of qualitative research methodologies and methods. Traditions and methods covered may include but are not restricted to Phenomenology, Hermeneutics, Action Research, Ethnography, participant observation, focus groups, and interviews. Participants will have the opportunity to develop a research proposal in the area of Aging and Health.

AGHE-901* Knowledge Translation and Uptake
An examination of the foundations of knowledge synthesis, translation, and uptake into practice with emphasis on definitions, frameworks, barriers and facilitators, interventions and evaluation and developing knowledge translation plans. Winter.

AGHE-902* Statistical Methods for Aging Research
This course provides a comprehensive review of the application of advanced statistical analysis in aging research. Topics include assessment of the validity and treatment of results in scientific literature, sampling variability, confidence intervals, hypothesis testing, univariate analysis, analysis of variance, regression models and non-parametric statistics. Emphasis will be placed on appropriate interpretation and appraisal of statistical information.

AGHE-903* Critical Analysis of Theories of Aging
Major theoretical perspectives on aging from different disciplines will be explored and critically evaluated for their usefulness in guiding and informing practice and research

in the broad area of healthy aging. Emphasis will be on developing a critical approach to theory development, testing and implementation. Fall.

AGHE-976* Independent Study
A study, offered through distance education, under the guidance of a faculty member, in a subject area related to the faculty member's area of expertise or special interest that is not covered within existing courses. The Independent Study must be linked to studies in Aging and Health but not directly overlap with the student's thesis work.

AGHE-999 Ph.D. Thesis

ANATOMY AND CELL BIOLOGY

EFFECTIVE 2014-2015, THE COURSES LISTED BELOW OR THE EQUIVALENT ARE UNDER THE DEPARTMENT OF BIOMEDICAL AND MOLECULAR SCIENCES. CURRENT COURSE NUMBERS AND DESCRIPTIONS CAN BE FOUND HERE: COURSES OF INSTRUCTION BIOMEDICAL AND MOLECULAR SCIENCES

STUDENTS ENROLLED IN ANATOMY AND CELL BIOLOGY PROGRAMS IN 2013-2014 OR EARLIER ENROL IN COURSES WITH THE COURSE CODES AND NUMBERS AS SHOWN BELOW.

ANAT-808* Topics in Biology of Reproduction
This seminar course will cover current topics in male and female reproduction and pregnancy. The format includes critiques of original publications and attendance of and reports on the interdepartmental reproductive seminar series.
Credit value: 3.0 credit units, spread over Fall and Winter terms (every second year).
Attendance and reporting of interdepartmental reproductive group seminars:12 h
Overview lectures by professors on assigned topics:12 h
Presentation and participation in student seminars:12 h
Minimal quota of students for course to run:4
Course Coordinator: R. Oko

ANAT-812* Advanced Neuroanatomy
This course includes the study of the structure and general function of the nervous system and is given jointly with ANAT-312*. Special topics assigned for seminars and essay projects. Fall term; lectures, laboratories and seminars. L. Mackenzie
Learning Materials $40

ANAT-814 Clinically Oriented Anatomy
A detailed study of the gross and functional anatomy of the human body with emphasis on clinical application. The course is given jointly with part of Phase I of the medical curriculum. Additional work prescribed for graduate students. Full course; lectures, laboratories and tutorials. C.W.Reifel
Learning Materials $40

ANAT-816* Biology of Reproduction
A comprehensive overview of the cellular and molecular biology of mammalian reproduction. The first part of the course consists of lectures covering gametogenesis, fertilization, early embryo development and placentation. The second part involves student presentation of seminars and group discussion of current topics in reproductive

biology. Clinical aspects of reproduction will also be covered. Offered jointly with ANAT-416*. Graduate students submit one major essay and give a seminar from a list of selected topics.
Three hours lecture/seminar, Fall term. F.W.K. Kan
PREREQUISITE: ANAT-215*/216* or ANAT-311, or ANAT-309* or permission of the Department.

ANAT-817* Mammalian Embryonic Development
Overview of mammalian development, emphasizing the cellular and molecular mechanisms that direct embryogenesis. The first 2/3 of the course consists of lectures on gastrulation, neurulation, establishment of the body axes, differentiation, sex determination, limb development, and organogenesis. The last 1/3 of the course involves student seminar presentations and group discussions of current topics in developmental biology and teratology. Offered jointly with ANAT-417*.
Students submit a major essay and give a seminar from a selected list of topics.
Three hours of lectures/seminars per week. Winter term. C.W. Reifel
PREREQUISITE: ANAT-416*/816*, or permission of the Department.

ANAT-818* Chemical Neuroanatomy
A contemporary and comprehensive assessment of the neurochemical features of the mammalian nervous system as they relate to development, function and disease. Winter term; 3 hour lecture/seminar. Offered alternate years. M.D. Kawaja.
PREREQUISITE: ANAT-312* or LISC-322* or permission of the Department.

ANAT-822* Cellular and Molecular Neuroscience
An in-depth study of the biophysical properties of neurons and diseases that affect the function of neurons and glia. Topics will include cable properties of dendrites, voltage- and ligand-dependent channels, and molecular mechanisms responsible for neuronal death and regeneration. The course will be based on lectures and student seminars of selected readings. Given concurrently with LISC-422*, with additional assignments for graduate students. Enrolment is limited.
PREREQUISITE: LISC-322 with a minimum of 70% or an equivalent course or permission of the instructor.

ANAT-825 Medical Neuroscience
A multidisciplinary graduate level course exposing students to the clinical aspects of neuroscience. Didactic lectures cover detailed organization of the nervous system with clinical implications. Laboratories review basic neuroanatomy and pathology. Clinical demonstrations expose students to several neurological disorders.
Fall; didactic lectures, laboratories, and clinical cases (up to 20 hr/week; 9 weeks total)

D. Munoz
PREREQUISITES: Enrolment in graduate faculty and involvement in neuroscience research.

ANAT-826* Current Concepts in Sensorimotor Integration
A course for graduate students to explore more advanced concepts of sensorimotor integration in the nervous system. This is a multi-disciplinary lecture/seminar course with active student participation expected. The course will consist of weekly sessions focusing on specific concepts such as feature detection, population coding, sensorimotor transformations, reflexes versus voluntary control, central pattern generators. Normally offered concurrently with PSYC-924*. Winter term; 1 hour lecture; 2 hour seminar/discussion.
PREREQUISITE: LISC-322* or equivalent.
EXCLUSION: PSYC-924*

ANAT-831* Cell Structure and Basic Tissues
For those with no histology background, an outline of basic vertebrate tissues. Extra assignments will be given to graduate students.
Fall term. Lectures and laboratories in common with ANAT-309 in Fall Term. F.W.K. Kan
EXCLUSION: ANAT-311, ANAT-309

ANAT-833* Selected Topics in Mammalian Histology
Detailed histological assessment of selected organs and tissues.
Winter Term, alternating years. Lectures and seminars. M.D. Kawaja.
PREREQUISITES: ANAT-215* and 216* or ANAT-311 or ANAT-309* or ANAT-831*.

ANAT-834* Principles and Techniques in the Teaching of Anatomical Sciences
A series of lectures and workshops illustrating modern teaching philosophy and technique specifically designed for teaching Anatomy in the Health Sciences.
Fall Term. Drs. R.A. Easteal and L.W. MacKenzie.

ANAT-835* Microteaching in Anatomical Sciences
Microteaching as a technique for new and experienced teachers will involve the presentation of a series of 3-minute micro lectures with video recording and feed back sessions.Winter Term. Drs. R. A. Easteal and L. W. MacKenzie.

ANAT-836* Advanced Topics in Embryonic Development
This half-credit course will be offered to students who have completed ANAT-417* in their undergraduate studies in the Queen's Life Sciences Program. Through a series of

tutorials and seminars, the course will focus on the most up-to-date discoveries in three areas of developmental biology. The areas reflect the expertise in the department.
Winter Term. Dr C.W. Reifel.

ANAT-837* Advanced Topics in Neuroanatomy
This half-credit course will be offered to students who have completed ANAT-312* in their undergraduate studies in the Queen's Life Sciences Program. Through a series of tutorials and seminars, the course will focus on the most up-to-date discoveries in three areas of neuroanatomy.
The areas reflect the expertise in the department.
Fall Term. L. MacKenzie

ANAT-838* Advanced Histology and Staining Techniques
An advanced mammalian histology course including advanced staining techniques in demonstrating various components of Histological sections. Winter Term.
Drs. L.W. MacKenzie and S.C. Pang.

ANAT-839 Selected Topics in Pregnancy
The course has two components.
A 7 week (26 hour) series of discussions on assigned readings, selected readings and a 45 minute presentation by each student on medical and ethical aspects of obstetrics, gynaecology, endocrinology, population and gender health and psychology. The second component is a 50 hour Human Placenta Research Summer Workshop.
Summer Term. B.A. Croy and C. Tayade

ANAT-840* Research Techniques in Cell and Molecular Biology
This course is designed to equip graduate students with modern research techniques in Cell and Molecular Biology. This intense 2-week course consists of 2-3 hours of lecture and 6-8 hours hands-on laboratory exercise per day. Techniques include light microscopy and immunohistochemistry, electron microscopy and immunocytochemistry, RNA, DNA and protein isolation, Northern and Western blot analysis, probe design, and conventional and realtime PCR. Summer Term in odd years.
S.C. Pang

ANAT-847* Research Projects in Anatomy and Cell Biology
An investigation into concepts and techniques in selected areas of research offered in the Department of Anatomy. Research projects carried out under the supervision of a staff member. Winter term. L. MacKenzie and Staff.

ANAT-853* Cellular and Molecular Cardiovascular Sciences
An advanced inter-disciplinary course studying the anatomy, pharmacology and physiology of the cardiovascular system at the molecular and cellular level. The course is comprised of lectures, discussion and student seminars based on recent literature. Winter term, 3 hour seminar. S.C. Pang
PREREQUISITE: Undergraduate degree in Life Science or equivalent or permission from department.

ANAT-889
Practicum.

ANAT-854* Cardiovascular Sciences
A study of the anatomy, pharmacology and physiology of the cardiovascular system based on lectures, seminars, laboratories and selected readings (same as PHAR-854 and PHGY-854). Topics include structure-function of the heart and blood vessels, mechanisms of signal transduction, drug effects on second messenger systems, the cardiac pump, integrated cardiovascular control, arterial oxygen transport, control of blood pressure and hypertension. Given jointly with LISC-454*. Additional work prescribed for graduate students.
Enrolment limited. Fall term; lectures, seminars and laboratories. M. Adams
PREREQUISITE: OR COREQUISITES: ANAT-311, ANAT-309*, PHAR-420 and PHGY-312 or their equivalent.

ANAT-898 Master's Independent Project Report
As a component of the curriculum for the Pattern II Program in Anatomical Sciences, students will complete an independent studies project under the supervision of departmental faculty member. Students will summarize their work in a written report that will be reviewed by a committee and orally defended.

ANAT-899 Master's Thesis Research

ANAT-926* Current Topics in Anatomy and Cell Biology

The topics will be chosen on the basis of special needs of the students, and must be approved by the Coordinator of Graduate Studies. Fall or winter; seminars. C.H. Graham

ANAT-999 Ph.D. Thesis Research

APPLIED SUSTAINABILITY

CMAS-801* Topics in Applied Sustainability
Applied sustainability is the application of science and innovation to meet human needs while indefinitely preserving the life support systems of the planet. This course provides an overview of the field with particular focus on implementation of engineering solutions. The course will be divided into three sections in which the technical and policy-related issues will be explored: 1)Sustainable Energy Technologies, 2) Sustainability and Fresh Water Systems and 3) Sustainable Resource Management.

CMAS-897* Applied Sustainability Seminar Series
The objective of this course is to expose students enrolled in the Collaborative Masters in Applied Sustainability (MAS) program to the different areas of applied sustainability research and practice, providing a shared learning experience to link students from each of the departments participating in the MAS program. An additional objective is to provide opportunities to develop and refine presentation skills, the ability to give and receive constructive criticism, and to pose and respond to questions. This course shall be graded on a Pass/Fail basis. Fall and Winter terms.

CMAS-898 Master's Project

CMAS-899 Master's Thesis Research

ART CONSERVATION

ARTC-801* Conservation Principles
A general survey course dealing with various aspects of conservation and museology. The course deals with professional ethics, control of the factors causing deterioration and with preventive conservation including care in handling, transporting and storing cultural property. Half course; fall and winter. F. Graham.

ARTC-802* Properties of Materials
This course discusses organic and inorganic materials important in conservation. Topics covered will include the chemical structure, properties, degradation processes, and conservation treatments of the different materials. Scientific principles that are encountered in conservation treatment will also be studied. Half course.TBD..

ARTC-804* Scientific Methods for the Conservator
This course covers the theory and use of the polarizing microscope, which enables the identification of art materials including pigments and fibers. Other investigative techniques that will be discussed include: microchemical tests and fluorescence microscopy. This course comprises both lectures and labs. Half course; winter. S. Williams.

ARTC-806 Internship I
The first of two internships of three months duration in the conservation department of an approved institution or with an approved conservator. The internships are intended to expose students to a variety of situations in the field. Whenever possible, internships will be arranged to suit the interest and abilities of individual students. Three months (12 weeks) duration; summer.

ARTC-807 Internship II
The second internship of three months duration in the conservation department of a recognized institution or with an approved conservator. Wherever possible, the second internship will be taken in a situation relevant to the student's area of interest. Three months (12 weeks) duration; summer.

ARTC-808* Instrumental Methods of Analysis
This course is designed to give an understanding of selected instrumental methods of analysis used in art conservation. Aspects covered include the fundamental principles underlying the techniques, the instrumentation, and the practical applications and limitations. The principles of colour and light will also be covered. There will be lectures and laboratory demonstrations. Half course; fall. TBD.

ARTC-810* Imaging and Documentation
This course covers theory and practice of digital imaging for flat and 3-D cultural heritage objects, using several techniques: digital photography, infrared, ultraviolet, reflectance transformation imaging, x-ray and others. Post-capture image manipulation and image storage/retrieval will be stressed as well as studio protocol and artifact handling and safety. Half-course; fall. N. Paul.

ARTC-811* History, Technology and Conservation of Artifacts I
A detailed study of the structure and characteristics of archaeological and historic artifacts. Historical and geographical factors affecting the development of artifacts are examined as well as the interrelationship of materials and methods of production. The causes of deterioration of artifacts and methods of preventing further deterioration are evaluated, together with the materials and methods needed to carry out conservation treatments. This course concentrates on artifacts made primarily of metals and stone. Half course. Not offered 2018-19.

ARTC-812* History Technology and Conservation of Artifacts II
This course has the same format as ARTC-811* but with particular emphasis on artifacts made from materials of organic origin, especially wood, leather, bone and ivory. Half course; fall. TBD.

ARTC-813* History Technology and Conservation of Artifacts III
This course has the same format as ARTC-811* but with particular emphasis on artifacts of organic origin, especially textiles. Half course; winter. TBD.

ARTC-821* History, Technology and Conservation of Paintings I
A detailed study of the structure and characteristics of historical fabric-supported paintings. The history of materials and techniques, agencies of deterioration, and methods of remedial treatments are examined. Half course; two and a half term-hours; fall. P. Smithen.

ARTC-822* History, Technology and Conservation of Paintings II
Continuing the studies begun in ARTC-821*, this course examines the materials and techniques, deterioration, and conservation of paintings on solid supports. Emphasis will be placed on the study of wood panel paintings. Half course; winter. P. Smithen.

ARTC-823* History, Technology, and Conservation of Contemporary Art
This course has the same format as ARTC-821* with a concentration on contemporary art. Emphasis will be placed on contemporary painting and multi-media works. Half course; winter. Half-course. Not offered 2018-19.

ARTC-824* Technical Examination of Paintings
This course will involve theoretical and practical study of various types of technical examination of paintings. Emphasis will be placed on interpreting observed phenomena and exploring their contributions to art historical and conservation study and practice. Examination techniques to be studied will include visible light, radiography, microscopy, and various instrumental analytical and dating techniques. Practical sessions will be held in the laboratories of the Master of Art Conservation Program using historical paintings from the collections of the Agnes Etherington Art Centre. Field trips to other conservation laboratories will also be organized. Field trips. Limited enrolment. Not offered 2018-19.

ARTC-831* History, Technology and Conservation of Paper Objects I
A detailed study of the structure and characteristics of paper objects. Historical, geographical, social and economic factors in the development of the technology of paper artifacts are considered. The causes of deterioration of paper objects are described and methods of preventing further deterioration are evaluated, together with materials and methods needed to carry out conservation treatments. This course focuses on archival materials. Half course; fall. R. Hill

ARTC-832* History, Technology and Conservation of Paper Objects II
This course has the same format as ARTC-831* with particular emphasis being placed on prints, drawings and watercolours. Half course; winter. R. Hill.

ARTC-833* History, Technology and Conservation of Paper and New Media III
This course has the same format as ARTC-831* with emphasis on artifacts of complex structure such as photographs, digital object and new media and focuses on their preservation in an institutional context. Half course. Not offered 2018-19..

ARTC-850* Introduction to Artifact Conservation Practice
Studio and workshop practice in the conservation of artifacts, particularly those made of ceramics and glass. Methods of preventing further deterioration are applied to artifacts and experience is gained in the use of materials for conservation. Half Course; fall. TBD.

ARTC-851* Artifact Conservation Practice I
This course continues the studies begun in ARTC-850* with special emphasis on artifacts made from metals and stone. Sixteen term-hours; winter. Half course. Not offered 2018-19.

ARTC-852* Artifact Conservation Practice II
This course continues the studies begun in ARTC-850* with special emphasis on artifacts made of wood, leather, bone and ivory, and those made of a number of different materials. Half course; fall. TBD.

ARTC-853* Artifact Conservation Practice III
This course continues the studies begun in ARTC-850* with particular emphasis on artifacts made from materials of organic origin, especially textiles. Half course; winter. TBD.

ARTC-861* Paintings Conservation Practice I
Laboratory practice in painting conservation treatments; introduction to assessment of condition and condition reports. Theoretical studies of ARTC-821* are applied to practical restoration projects undertaken under faculty supervision. Half course; fall. P. Smithen.

ARTC-862* Paintings Conservation Practice II
This course continues studies begun in ARTC-861*. Half course; winter. P. Smithen.

ARTC-863* Paintings Conservation Practice III
This course is designed to provide second year students with increasingly more complex problems in the conservation of paintings. Aesthetic, historical and ethical aspects are considered along with practical approaches to the conservation of a variety of unusual painting materials and paintings on solid supports. Half course; fall. P. Smithen.

ARTC-864* Paintings Conservation Practice IV
Continuation of ARTC-863*. Half course; winter. P. Smithen.

ARTC-871* Paper Objects Conservation Practice I
Laboratory practice in the handling of the materials of art and conservation. Theoretical studies are applied to practical conservation and preservation projects, which are undertaken with faculty supervision. This course emphasizes the conservation and preservation of archival materials. Half course; fall. R. Hill

ARTC-872* Paper Objects Conservation Practice II
This course continues the studies begun in ARTC-871* with special emphasis being placed on the restoration and conservation of fine art objects on paper and related materials. Half course; winter. R. Hill.

ARTC-873* Paper/New Media Conservation Practice III
This course continues studies begun in ARTC-871* with special emphasis on artifacts of complex structure such as photographs, digital objects and new media and focuses on their preservation in an institutional context. Half course. Not offered 2018-19.

ARTC-874* Advanced Practice in Paper Objects Conservation
This course provides second year students with increasingly more complex problems in the conservation of paper objects. Aesthetic, historical and ethical aspects are considered along with practical approaches to the conservation of objects of varied structures and materials. Half course; fall. R. Hill

ARTC-897* Directed Study in Art Conservation
This course will provide students with an opportunity to explore specific topics in depth. This course will usually take the form of a closely supervised reading course in an area of the instructor's expertise. Half course. Not offered 2018-19.

ARTC-898 Research Project
Research will be carried out in consultation with and under the guidance of the instructor. Each student will conduct a research project and produce a written report. Students will need to obtain the instructor's permission to pursue research in an area relevant to the field of art conservation. The course will include oral presentations and formal reports. Full-year course; fall, winter, spring and summer. A. Murray

ARTC-899 Master's Thesis Research

ART HISTORY

Not all the courses listed below will be offered in any one year; a few are offered only infrequently. A list of the expected offerings with detailed course descriptions is available from the department in July or August each year.

The content of the courses designated Studies or Topics and listed without further description in the calendar varies from year to year.

An * denotes a one-term, or, half- course (3.0 credit units).

ARTH-800* Introduction to Professional and Pedagogical Skills
Not offered 2018-19.

ARTH-802* Studies in the History of Prints and Drawings
Not offered 2018-19.

ARTH-804* Topics in Critical and Cultural Theory
Fall; A. Morehead.

ARTH-805* Art Historiography
Not offered 2018-19.

ARTH-806* Studies in Iconography
Not offered 2018-19.

ARTH-807* Studies in the History of Renaissance Painting Technique
Not offered 2018-19.

ARTH-808* Studies in the History of Nineteenth-Century Painting Techniques
Not offered 2018-19.

ARTH-809* Conservation and Art History
Not offered 2018-19.

ARTH-810* Museums, Collecting and Culture I
Offered jointly with ARTH-434; Not offered 2018-19.

ARTH-811* Museums, Collecting and Culture II
Fall; C. Hoeniger

ARTH-812* Topics in Visual and Material Culture I
Winter; D. Robinson.

ARTH-813* Topics in Visual and Material Culture II
Not offered 2018-19..

ARTH-837* Medieval Art I
Not offered 2018-19.

ARTH-838* Medieval Art II
Offered jointly with ARTH 415; Winter; M. Reeve.

ARTH-839* Medieval Art III
Not offered 2018-19.

ARTH-840* Studies in Italian Renaissance Art I
Not offered 2018-19.

ARTH-841* Studies in Italian Renaissance Art II
Not offered 2018-19.

ARTH-842* Studies in Italian Renaissance Art III
Winter; U. D'Elia.
Materials: $30.00 (2018-19).

ARTH-844* Studies in Northern Renaissance Art
Fall; R. Spronk

ARTH-845* Studies in Northern European Art of the 17th-Century I
Not offered 2018-19.

ARTH-846* Studies in Northern European Art of the 17th-Century II
Winter; S. Dickey

ARTH-847* Studies in Southern European Art of the 17th-Century I
Offered jointly with ARTH 451; Fall; G. Bailey.

ARTH-848* Studies in Southern European Art of the 17th-Century II
Not offered 2018-19.

ARTH-849* Studies in 18th-Century European Art
Not offered 2018-19.

ARTH-850* Studies in 19th-Century European Art I
Not offered 2018-19.

ARTH-851* Studies in 19th-Century European Art II
Not offered 2018-19.

ARTH-852* Studies in 19th- Century European Art III
Not offered 2018-19.

ARTH-853* Studies in 19th -Century European Art IV
Not offered 2018-19.

ARTH-854* Studies in Baroque and Rococo
This course will examine topics in Baroque and Rococo painting, sculpture, architecture, and the so-called decorative arts in Europe, colonial Asia, colonial Latin America, and/or colonial North America. Not offered 2018-19.

ARTH-860* Cultural Heritage Preservation
Cultural heritage preservation will be considered through historical and theoretical documents and with the analyses of approaches using case-studies drawn from UNESCO World Heritage Sites. The impact of war on heritage will be stressed. The goal is to provide an advanced introduction to the subject and to enable focused research on specific sites. Not offered 2018-19.

ARTH-862* History of Photography I
Not offered 2018-19.

ARTH-863* History of Photography II
Not offered 2018-19.

ARTH-864* Studies in 20th-Century Art I
Not offered 2018-19.

ARTH-865* Studies in 20th-Century Art II
Not offered 2018-19.

ARTH-868* Studies in Contemporary Art I
Offered jointly with ARTH 422; Winter; J. Kennedy

ARTH-870* Studies in Canadian Art I
Not offered 2018-19.

ARTH-871* Studies in Canadian Art II
Not offered 2018-19.

ARTH-872* Studies in Canadian Architecture
Not offered 2018-19.

ARTH-874* Studies in Architectural History I
Not offered 2018-19.

ARTH-875* Studies in Architectural History II
Not offered 2018-19.

ARTH-876* Studies in Cultural Policy I
Not offered 2018-19.

ARTH-877* Studies in Cultural Policy II
Not offered 2018-19.

ARTH-878* Media and Society I
Not offered 2018-19.

ARTH-879* Media and Society II
Not offered 2018-19.

ARTH-880* Agnes Etherington Art Centre Practicum
Fall, winter, or summer. Various instructors.

ARTH-890* Directed Research in a Cultural Institution
This course is intended to provide graduate students an opportunity to undertake a directed research project in an art gallery, museum, or archive. The research will focus on some aspect of the chosen institution's collection and will be supervised by a specialist in that area who works at the institution or co-supervised by such a specialist and a faculty member. Fall, winter, or summer.

ARTH 897* Directed Reading
Individual directed reading course under the guidance of a faculty member in an area of the instructor's expertise. Fall or Winter.

ARTH-898* **Research Paper**

ARTH-899* **Master's Thesis Research**

ARTH-904* **Special Area Examination I**

ARTH-905* **Special Area Examination II**

ARTH-906* **General Area Examination III**

ARTH-907* **Research Project at the Art Gallery of Ontario**

ARTH-908* **Special Research Seminar**

ARTH 997* **Directed Reading**
Individual directed reading course under the guidance of a faculty member in an area of the instructor's expertise. This course is normally reserved for Doctoral students. Fall or Winter

ARTH-999* **Ph.D. Thesis Research**

ARTS LEADERSHIP AND ARTS MANAGEMENT

ARTL- 801* Arts Marketing
Students will apply the principles of audience development, audience diversity, arts marketing and multiple income-generating streams; generate marketing plans; market research; implement all aspects of arts marketing handled in an arts marketing department. This course includes a capstone project which will be a group investigative field study of an arts organization and best arts marketing practices (national and international) that culminates in a final written and oral presentation which will include recommendations to the arts organization being examined. Students will apply the theories and principles of arts marketing and audience development; apply theories and best practices in arts marketing with product, communication, distribution channel and pricing strategies; understand the continuum of audience development and engagement; generate marketing budgets and forecasts using analytics and metrics; and create and implement a strategic marketing plan. Skills workshops on social and digital media, arts education and community engagement will be offered to compliment the course curriculum.

ARTL-802* Arts Philanthropy
Students will apply the principles of philanthropy; create campaign structures and implement techniques; plan corporate, foundation, and individual fundraising campaigns using direct response, prospect research; sponsorship and philanthropic selling; patron fundraising, membership programs and major gift donor cultivation programs; grant writing; foundation fundraising, fundraising data base management; annual operating, capital, and endowment campaigns; museum programs and techniques; communication strategies for fundraising; staffing and department structures. Students will understand the continuum of giving, and be able to create a prospect pipeline to move prospects through a process of cultivation resulting in donations; be knowledgeable of current giving and demographic trends and practices in fundraising in a dynamic national and international environment; and develop realistic fundraising goals and plans with a solid understanding of individual, major gift, planned giving, capital gifts, sponsorship, and foundation fundraising.

ARTL-805 Strategic Planning
Students will generate an effective and collaborative strategic planning process for a mission-based and multi-stakeholder arts organization; understand a variety of strategic planning tools; gain insight into the principles of governance; become acquainted in leading deep organizational change with change management tools; and be acquainted with a variety and appropriateness of organizational structures. Students

will understand the relationships between strategy, planning and execution; develop a strategic and mission-based approach to mapping the organization's future; improve analytical skills of internal and external environment data and trends; use key performance indicators and benchmarks to evaluate progress on strategic goals; and develop creative planning and problem-solving skills for opportunities and challenges, and develop and implement a strategic plan.(1.5 credit units)

ARTL-806 Strategic Leadership & Governance
Cultural leaders drive innovation, attract and foster leadership talent within the organization, and create a successful and vibrant culture to deliver high-impact results. Students will analyze a variety of leadership styles and organizational cultures, and provides skills in leading through complexity and change in a quickly evolving industry. Students will undertake a personal leadership assessment and form their own leadership learning objectives, and will be able to seek career advice from industry leaders. The course provides the insight into governance and board leadership, including legal and fiduciary responsibilities and duties of loyalty and care. Students will engage in strategic thinking, leading organizational change, creating a high-performance organization, and collaborative consensus building. They will gain insight into governance and exercising executive leadership that will result in productive and engaged boards and organizations. (1.5 credit units)

ARTL-807 Cultural Policy
This course provides an overview of Canadian cultural policy and its impact on arts organizations. This includes a study of the historical development, formulation and execution of cultural policy in municipal, provincial and federal jurisdictions. Students will focus on the status of the artist through the exploration of institutional and governmental acts, policies, reports, objectives, strategic initiatives and programs. This course includes a research paper comparing Canadian and indigenous cultural policy to other international practices to provide strategic recommendations for future cultural policy development. Students will gain an intellectual grounding in theoretical conceptual frameworks and socio-political approaches to cultural policy; appreciate its public and artistic impact; gain an understanding of its historical evolution; be familiar with granting bodies and processes; government relations; and be able to evaluate the impact of cultural policy on cultural organizational planning and programming. Experiential learning includes the completion of a government grant. (1.5 credit units)

ARTL-808 Contract Negotiations
Students will acquire a working knowledge of the rights and needs of artists, artist unions and associations, relevant requirements of labour law, AODA and the Occupational Health and Safety Act, collective bargaining process, and negotiating

contracts. Students will learn to plan negotiation approach within a contractual framework, utilize critical analytical thinking within a legal framework, succeed in a team-based environment, learn communication and persuasive skills, analyze financial and other impacts of contractual amendments, create a contract, and present a contract for ratification**.** (1.5 credit units)

ARTL-810 Arts Leadership Capstone Project
Students will be required to secure their own work practicum, and the program has incorporated a budget for Genovese, Vanderhoof and Associates (who specialize in arts placements and who have a track recording in internship placements) to assist them in this process. Students will report to a faculty supervisor from the School of Drama and Music. The practicum / research report represents the culmination of the student's learning to apply and integrate the knowledge garnered from the program. In addition to obtaining experiential learning within an arts organization, students will write a research project report that will include an in-depth strategic review encompassing artistic vision, audience development, revenue and business development, governance and human resources, financial analysis and the external environment. This research project report will also include recommendations that can contribute to the future success of the organization. Through their practicum, the Masters students will gain practical experience and apply their theoretical knowledge; observe and analyze problems and solutions in a professional arts setting; interact with arts colleagues in a professional environment and in a wide range of activities; be able to find, analyze, evaluate, select and integrate information using various industry sources and from critical judgements through the preparation of the final research report on an arts institution; and gain insight into their future role and career interests in the arts. (6.0 credit units)

ARTL-814* Creative Entrepreneurship
This course will be of interest to students planning to work in, or develop products and services for, creative fields such as the fine and applied arts, design, theatre, teaching, advertising, film/video, music, and publishing. Students will practice idea generation, and conduct interdisciplinary market research to discover new niches and opportunities. They will learn how to model and present innovative solutions to "wicked" (persistent, ambiguous, evolving, multi-stakeholder) creative, social, technical, and business problems, and how to effectively promote new initiatives to secure buy-in from leadership, funding support, and sustained user engagement. This is an online course. (This course is offered jointly with ENIN-301. Graduate students have additional course requirements). Exclusion: ENIN-301.

ARTL- 820* Theatre Administration

This course examines a range of administrative and collaborative skills necessary for producing theatre works. Among the areas that will be defined and discussed are marketing, budgeting, fundraising, staffing, and production management. A variety of theatre-producing organizations (commercial, non-profit, university, and community) will be dissected to examine the assumptions which drive production decisions. The nature and importance of a "mission statement" for producing bodies will be stressed, and organizational structures will be analyzed. There will be a particular focus on the relationship between financial and physical resources and artistic vision. The nature of theatrical production as a larger social force and the outreach potential of theatre pieces will also be explored. Graduate students must complete an additional assignment demonstrating higher level analytical and interpretive skills, applying concepts learned in other Arts Leadership graduate courses. Offered jointly with Drama-448. Graduate students taking this course will be required to do an additional assignment or assignments.

BIOCHEMISTRY

EFFECTIVE 2014-2015, THE COURSES LISTED BELOW OR THE EQUIVALENT ARE UNDER THE DEPARTMENT OF BIOMEDICAL AND MOLECULAR SCIENCES. CURRENT COURSE NUMBERS AND DESCRIPTIONS CAN BE FOUND HERE: COURSES OF INSTRUCTION BIOMEDICAL AND MOLECULAR SCIENCES.

STUDENTS ENROLLED IN BIOCHEMISTRY PROGRAMS IN 2013-2014 OR EARLIER ENROL IN COURSES WITH THE COURSE CODES AND NUMBERS AS SHOWN BELOW.

BCHM-810* Protein Structure and Function 3L/T
This course presents an integrated approach to the study of protein function. Topics include proteomic techniques in protein profiling, mass spectrometry, 2-D gel electrophoresis, yeast 2-hybrid analysis, protein chips, protein purification, imaging, surface plasmon resonance, calorimetry, bioinformatics and protein evolution, protein modifications and processing, interpretation and applications of 3-D structure, protein structure-function relationships. Three lecture hours per week; Fall. A. Mak. Offered jointly with BCHM-410* with additional work required. PRE-REQUISITES: BCHM-310 or 315*/316*/317* or permission of the instructor.
EXCLUSION: BCHM-410*

BCHM-811* Advanced Molecular Biology 3L/T
This course concentrates on the molecular biology of mammalian models particularly mechanisms involved in human diseases. The human genome project, forensic analysis, DNA diagnostics of human diseases, models of transcriptional and growth regulation and cancer, DNA repair, RNA processing and translation are all discussed. Emphasis on recent findings and course materials will be drawn from current reviews.
Three lecture hours per week. Winter. C. Mueller. Offered jointly with BCHM-411* with additional work required.
PREREQUISITE: BCHM-310 or 315*/316*/317* or permission of the instructor
EXCLUSION: BCHM-411*.

BCHM-820* Advanced Topics in Molecular Biology
Discussions and presentations on current topics in molecular biology. The emphasis will be on mammalian systems and will cover a wide range of topics relating to recent advances in molecular biology. Typical topics include gene regulation, replication, DNA repair, forensic analysis, human genomics and genetics. Marks are based on student presentations and essays typically in "News and Views" or Mini-Review

formats. Three hours per week, presentations and discussions of original papers. Fall; Alternate years; C. Mueller.

BCHM-822* Mechanisms of Metabolic Control
Lectures and discussions on mechanisms of metabolic control. Recent research on a wide range of specific metabolic systems is examined critically. Emphasis is placed on biochemical factors and principles which play a role in the integration and control of metabolism.
Lectures and seminars, three hours per week; Winter; G.P.Côté.
PREREQUISITE: BCHM-431* or equivalent.

BCHM-823* Advances in Protein Structure and Function
This course consists of weekly presentations and discussions of recent advances towards the understanding of protein structure and function. Topics of discussion include novel approaches, techniques and concepts in the discovery of protein functions. Students will develop skills in literature research, critical evaluation of published work, effective presentation and discussion of papers.A specific theme, such as cell motility, may be used to illustrate research approaches employed to study biological systems in general. Three lecture hours per week; Winter; Alternate years; A. Mak. PREREQUISITE: BCHM-410* or equivalent.

BCHM-828*/928* Research Project in Biochemistry
This course is intended to provide the student with the opportunity to gain familiarity with their research field. Students will review the literature related to their proposed graduate research thesis project and write a series of essays on topics selected in consultation with their supervisor; these will be evaluated by a supervisory committee consisting of their supervisor and two other faculty members. They will also develop a written draft research proposal that will be presented to their supervisory committee and defended in a final oral examination. This course is not mandatory but is highly recommended to be taken by students in the first full term of the graduate program. G.P. Côté (course coordinator).

BCHM-830 Biochemistry Seminar Program for M.Sc. students

BCHM-832* Molecular Basis of Cell Function
This course provides an introduction to the signaling pathways that regulate key cellular functions such as growth and motility. The biochemical and structural principles that underlie the regulation of enzyme and protein activity in cells are emphasized. Topics include protein kinases and phosphatases, ubiquitin modification, G-protein-coupled receptors, growth factor receptors, scaffold and adaptor proteins,

Ras GTPases, phospholipases, oncogenes, cyclic nucleotides, phosphoinositides, isoprenoids and steroid hormones. Offered jointly with BCHM 432. Three lecture hours per week. Fall; G.P. Côté. PREREQUISITE: BCHM 310, or BCHM 315 and BCHM 316 and BCHM 317 for BCHM students; BCHM 310, or BCHM 315 and BCHM 316 for LISC students (or equivalent).
EXCLUSION: BCHM432 (BCHM 431,BCHM 433, BCHM 831* and BCHM 833*).

BCHM-841* Current Topics in Biochemistry I
This course will focus on protein structure and function with special emphasis on membrane proteins and selected soluble protein systems. The course will consist of lectures and presentations that will be organized around specific readings from the recent literature. A portion of the course will be devoted to membrane protein structure and function. Selected examples of structural and functional studies of soluble proteins will include enzymes and inhibitors; protein-protein interactions; protein engineering; high-throughput identification of enzyme substrates. Some instruction will be given in homology modeling and database analysis of gene products. Three hours per week, half course lectures and seminars. Fall; Alternate years; B. Hill, P. Davies. Prerequisite: BCHM 410* and BCHM 411* (or equivalent) and permission of co-ordinator.

BCHM-899 Master's Thesis Research

BCHM-930 Biochemistry Seminar Program for Ph.D. students

BCHM-999 Ph.D. Thesis Research

BIOLOGY

All courses (except BIOL-899 and BIOL-999) are half-courses (3.0 credit units) which are offered either in the fall or winter term if there is sufficient student interest. Detailed outlines of course content are available during the summer of each year. Most courses are offered in alternate years.

BIOM-800* Introduction to Mathematical Modeling in Ecology and Evolution
Modeling will be presented in the context of biological examples drawn from ecology and evolution, including life history evolution, sexual selection, evolutionary epidemiology and medicine, and ecological interactions. Techniques will be drawn from dynamical systems, probability, optimization, and game theory with emphasis put on how to formulate and analyze models. Three term hours. Not offered 2018-19.

BIOL-801* Evolutionary Medicine
A survey of the ways in which concepts from evolutionary biology can be used to better address and understand issues related to human health. Topics might include the evolutionary biology of infectious diseases, the utility of phylogenetics in infectious diseases, the evolution of drug (e.g., vaccines) and antibiotic resistance, the evolutionary biology of human genetic disorders, aging and senescence. Three term hours. Not offered 2018-19.

BIOL-806* Plant Molecular Biology
Model systems for plant molecular genetics; gene identification and cloning; gene transfer techniques including vector construction; transposons; genetic regulation and expression. Not offered 2018-19.

BIOL-811* Plant Metabolism
This course explores contemporary research ideas and techniques used to elucidate plant metabolism and its control. Topics include plant signal transduction, plant metabolic adaptations to abiotic and biotic stress, as well as the application of proteomics, genomics, and molecular biology for comprehending plant metabolism and the production of 'improved' transgenic crops via metabolic engineering. Not offered 2018-19.

BIOL-812* Introduction to computational analysis in biology
This course will be a hands-on introduction to essential bioinformatics skills. The goal is to build a foundation of computational skills that enable analysis of large biological data. We will learn command-line Unix/Linux, shell scripting, and installation/testing/usage of popular public bioinformatics packages. We will spend

significant time learning Perl and/or Python and Matlab. The course will rely heavily on problem-based learning and in-class discussion. Assignments will involve analyses that use primary literature data, particularly next-gen sequencing data. 50% of the final grade is based on a research project conceived and carried out independently. No prior programming experience is necessary. Not offered 2018-19.

BIOL-813* Statistical and Machine Learning in Biology
A course in advanced techniques for analyzing biological data. Possible topics include statistical and machine learning (e.g. likelihood models, Monte Carlo methods, approximate Bayesian computation), and neural networks (e.g. deep, recursive, convolutional). Topics covered will depend upon student and faculty interests. Lectures & Tutorials (3hrs). Course weight: 3.0 credit units.
PREREQUISITE: BIOL-860 & BIOL-812 or equivalent

BIOL-817* Contemporary Issues In Biology
The focus will be on biological issues of current importance to provide a broad exposure within a range of specific disciplines. Topics will include critical analysis of biological issues that have been featured as news items either in the popular press or in science news journals within the previous 12 months. Three term-hours. Not offered 2018-19.

BIOL-818* Stress Biology
Environmental stress is addressed with respect to water, nutrition, temperature, toxins, and competition between organisms. Topics include adaptations to cope with stress; biological responses at the organismal, cellular, biochemical, physiological and molecular genetic levels. No specialized molecular biology background is required. Three term hours. Not offered 2018-19.

BIOL-819* Selected Topics in Molecular Genetics
Topics will range from population genetics to transcriptional regulation in both plants and animals. Application of the tools of molecular genetics to biological problems will be emphasized. No previous specialization in molecular biology is required, although some background in this area is highly recommended. Three term hours. Not offered 2018-19.

BIOL-820* Commercialization of Biological Research
Current issues relating to the biotechnology industry will be dealt with in detail. Topics covered include: grant writing; patenting; circumventing patents; funding sources; business plans; venture capital investments; public awareness; public perspective; and layperson presentations. Three term hours. Not offered 2018-19.

PREREQUISITE: At least one of the following: BIOL-201*, BIOL-205*, MBIO-318*, BIOL-441*, BIOL-330*/430* or equivalent.
EXCLUSION: PHGY-801.

BIOL-821* Communication Skills
Scientific writing and methods for the presentation of research in seminars, posters, and the popular media. Three term hours. Not offered 2018-19.

BIOL-822* Long-Term Environmental Change
The main focus of this course will be to review and assess the many techniques currently available to track long-term environmental change. An emphasis will be placed on biological approaches dealing with sedimentary analyses, but other proxy methods (e.g. ice cores, bore holes, etc.) will also be covered. General topics to be covered will include climatic change, acidification, eutrophication, lake and reservoir management, UV penetration, etc. Three term hours. Not offered 2018-19.

BIOL-824* Gateway to graduate studies
This course will introduce intellectual and professional skills important for success in graduate school and in careers in Biology. Course structure and content is applicable to all fields of biology, from ecology and evolution to cell biology, biochemistry, and molecular biology. Sessions will span topics from study design and hypothesis testing, to communication skills, to career paths and mentoring. The final assignment will be a written research proposal, following the departmental guidelines for the PhD proposal. The goals of the course include 1) introducing graduate students to an array of skills and topics important to their success, 2) helping to develop a community among new graduate students, 3) improving students' communication skills, and 4) introducing graduate students to several Biology faculty who will lead some of the sessions. Students are required to attend a mandatory weekend at the Queen's University Biological Station, with a cost-recovery fee for accommodation and meals. Three term hours. Fall. F. Bonier.

BIOL-830* Ecological and Evolutionary Genetics
Each year brings new molecular tools and significant advances in analytical techniques for using molecular data to address evolutionary and ecological questions. This course is an exploration of these with emphases varying from year to year depending on the expertise of the instructor. Topics may span natural selection and phenotypic plasticity, parentage and mating systems, speciation, hybridization, macroevolution, and phylogenetics.Students gain a thorough theoretical grounding of pertinent topics via lectures, student seminars, and readings from the current primary literature. Hands-on

analytical experience will be provided through student exercises using the latest software applications.Three term hours. Winter. R. Colautti.

BIOL-831* Bioremediation
Bioremediation is the use of organisms to alleviate environmental problems. Topics will include the biology of the organisms involved and their bioremediation processes. Plants act to absorb and concentrate heavy metals from soils whereas micro-organisms, invertebrates and plants degrade organic toxins and remove excess nutrients from soils, substrates and water. The processes include extraction, absorption, concentration, and degradation of contaminants. Not offered 2018-19.

BIOL-839* Plant Ecology and Evolution
Mechanisms of natural selection involving adaptive strategies for growth, survival and reproduction in plants and the consequences of this selection on the characteristics of plant populations and communities. Recent research topics and theoretical developments are stressed. Three term hours. Not offered 2018-19.

BIOL-843* Advanced Data Management and Experimental Design
This course provides an introduction to advanced statistical methods (multivate analysis, randomization methods, phylogenetic analysis) and experimental design for biologists. The emphasis is on problem solving and the use of microcomputers for data acquisition, management, analysis and publication. Three term hours. Not offered 2018-19.
PREREQUISITE OR COREQUISITE: BIOL-343* or equivalent.

BIOL-847* Data Analysis in Community and Paleoecology
A variety of quantitative techniques are now being used increasingly in the fields of community ecology, paleoecology and paleolimnology (e. g. linear and unimodal regression and calibration, direct and indirect multivariate ordination, quantitative reconstruction models, rate of change analysis and analysis of spatial and temporal data). This course will investigate these computational techniques and explore their applications in the above mentioned fields. This course assumes a working knowledge of classical statistics. Three term hours. Not offered 2018-19.
PREREQUISITE: BIOL-343* or permission by instructor.

BIOL-848* Field Course in Population Biology
This is a two-week field course designed to introduce graduate students to field research problems and methods in behavioural ecology, ethology, population and community ecology, and ecological genetics. The course consists of lectures, field

research projects and data analysis. Fall/Winter/Summer. C.G. Eckert, S. Lougheed, and Y. Wang.

BIOL-849* Environmental Issues
Consideration will be given to environmental, legal, economic, political, sociological and biological aspects of current issues in the management of the Great Lakes. Models for managing nutrients, toxics and fisheries will be compared from a multidisciplinary viewpoint. Three term hours. Not offered 2018-19.

BIOL-850* Darwinism and cultural evolution
Contributions of Darwinian evolutionary theory to the understanding of contemporary culture. Through seminars, essays, and group discussions, students explore ideas, research objectives, and recent discoveries in applying Darwinism to the interpretation of cultural products like art and literature, social-cultural institutions like religion and marketing, societal problems like war and environmental conservation, and emerging designs for new models of sustainable civilization in the 21st century. Not offered 2018-19.
EXCLUSION: BIOL-535

BIOL-855* Conservation Biology
Key issues in conservation biology will be explored in seminars and discussions. Topics will include: minimum viable populations, habitat configuration and sustainable populations, biodiversity, habitat fragmentation, edge effects, keystone species, meta-populations, restoration ecology, endangered species, inbreeding, heterozygosity and fitness, genetics of captive breeding, population genetics and conservation. Three term hours. Not offered 2018-19.

BIOL-860* Introduction to Management and Statistical Analysis of Biological Data
This course is for students at early stages of planning research and collecting data. Topics include experimental design, matching hypotheses with statistical analyses, parameter estimation and graphing. Analyses will be based on a normal error distribution implemented in the R statistical language. Lectures. (3 hrs) & tutorials (3 hrs); First 6 weeks of fall term. Enrolment may be limited. Course weight: 3.0 credit units.
EXCLUSION: BIOL-843

BIOL-861* Introduction to Linear Models for Biological Data
This course is for students with introductory statistics/experimental design training and a working knowledge of the R statistical language, and will cover fitting linear models to continuous data, model selection, diagnosis of key assumptions and data

visualization. Lectures (3 hrs) & tutorials (3 hrs). Second 6 weeks of fall term. Enrolment may be limited. Course weight: 3.0 credit units. Not offered 2018-19.
PREREQUISITES: BIOL-860 or equivalent.

BIOL-862* Application of Generalized Linear Models to Biological Data
Data analysis in Biology often involves counts, densities or proportions that require non-Normal analysis. This course introduce generalized linear models (GLMs) implemented using the R statistical language, including logistic regression, overdispersion and Poisson, quasi-likelihood, negative binomial and mamma models. Lectures (3 hrs) & tutorials (3 hrs). First 6 weeks of winter term. Enrolment may be limited. Course weight: 3.0 credit units

BIOL-863* Introduction to Mixed Effects Models for Biological Data
The course will focus on linear models that include random effects implemented using the R statistical language. Topics will include partitioning of random variance, nested, partially-nested and repeated measures experimental designs, and modem approaches to evaluating competing models. Lectures (3 hrs) & tutorials (3 hrs). First 6 weeks of winter term. Enrolment may be limited.Course weight: 3.0 credit units . Not offered 2018-19.

BIOL-865* Advanced Statistical Analysis of Biological Data
A course in advanced statistical techniques for biological data. Possible topics include comparative methods, phylogenetic analysis, general additive models, nonlinear regression, network analysis, time series analysis, resampling, path analysis. Topics covered will depend upon student and faculty interests. Lectures & Tutorials (3hrs). Course weight: 3.0 credit units .Winter. R. Colautti.
PREREQUISITE: BIOL-860 & BIOL-812 or equivalent.

BIOL-870* Classical Studies in Molecular Biology
In this course we will explore advances in molecular biology and genetics with a historical perspective. We will read classical papers outlining major discoveries such as the molecular structure of nucleic acids, the genetic code, the genetic basis of inheritance, and others. Classical studies will be paired with modern studies that build upon these earlier findings. Modern studies will change each year depending on the interests of the students. A major goal of the course is to gain an appreciation for how creativity and carefully designed experiments drive innovation. Students should have foundational knowledge of molecular biology and genetics, as evidenced by a BSc degree that included courses in these subjects.

BIOL-893 Mentoring Experience in Biology
Students will advise and train other students in biological investigations, normally over a two term period. Open to full-time students having completed two terms of study in Biology M.Sc. or Ph.D. programs. Activities include guidance on research proposals, research procedures, student presentations, and drafts of student work. This is a non-credit course, graded on a Pass/Fail basis.
PREREQUISITE: Permission of Coordinator of Graduate Studies

BIOL-897* Seminar Course
Attending a diverse array of seminars is an essential component in the development of a student, especially in a department as diverse as biology. The aim of this course is to develop skills in listening, synthesizing and critical thinking, as well as fostering the development of important oral and written communication skills. Students will be required to attend at least 30 department or specialized research seminars, as well as present a seminar based upon their graduate thesis research. Enrolment is extended over six terms and is limited to new graduate students in Biology. Fall/Winter/Summer. V. Friesen and L. Seroude.

BIOL-899 Master's Thesis Research

BIOL-951* Advanced Studies in Ecology, Evolution and Behaviour I
Selected topics in ecology, evolution and behaviour. An advanced course on current research in ecology, evolution and behaviour, based on recent research literature. For detailed information, consult the course coordinator.

BIOL-952* Advanced Studies in Ecology, Evolution and Behaviour II
Selected topics in ecology, evolution and behaviour. An advanced course on current research in ecology, evolution and behaviour, based on recent research literature. For detailed information, consult the course coordinator.

BIOL-953* Advanced Studies in Plant Sciences I
Selected topics in plant sciences. An advanced course on current research in plant science, based on recent research literature. For detailed information, consult the course coordinator. Three term hours; Winter. W. Snedden.

BIOL-954* Advanced Studies in Plant Sciences II
Selected topics in plant sciences. An advanced course on current research in plant science, based on recent research literature. For detailed information, consult the course coordinator. Three term hours; Winter. W. Snedden.

BIOL-955* Advanced Studies in Molecular and Cellular Biology I
Selected topics in molecular biology. An advanced course on current research in molecular biology, based on recent research literature. For detailed information, consult the course coordinator. Three term hours; Winter. P. Young.

BIOL-956* Advanced Studies in Molecular and Cellular Biology II
Selected topics in molecular biology. An advanced course on current research in molecular biology, based on recent research literature. For detailed information, consult the course coordinator. Winter. I. Chin-Sang.

BIOL-957* Advanced Studies in Animal Physiology I
Selected topics in animal physiology. An advanced course on current research in animal physiology, based on recent research literature. For detailed information, consult the course coordinator.

BIOL-958* Advanced Studies in Animal Physiology II
Selected topics in animal physiology. An advanced course on current research in animal physiology, based on recent research literature. For detailed information, consult the course coordinator.

BIOL-959* Advanced Studies in Environmental Sciences I
Selected topics in environmental sciences. An advanced course on current research in environmental sciences. For detailed information, consult the course coordinator.

BIOL-960* Advanced Studies in Environmental Sciences II
Selected topics in environmental sciences. An advanced course on current research in environmental sciences. For detailed information, consult the course coordinator.

BIOL-999 Ph.D. Thesis Research

BIOMEDICAL AND MOLECULAR SCIENCES

BMED-804 Clinically Oriented Anatomy
A detailed study of the gross and functional anatomy of the human body with emphasis on clinical application. The course is given jointly with part of Phase I of the medical curriculum. Additional work prescribed for graduate students. Full course; lectures, laboratories and tutorials. L. MacKenzie.
EXCLUSION: ANAT-814

BMED-805* Microteaching in Anatomical Sciences
Microteaching as a technique for new and experienced teachers will involve the presentation of a series of 3-minute micro lectures with video recording and feedback sessions. Winter term; R.A. Easteal and L.W. MacKenzie.
EXCLUSION: ANAT-835

BMED-806* Advanced Topics in Embryonic Development
This half-credit course will be offered to students who have completed ANAT-417 in their undergraduate studies in the Queen's Life Sciences Program. Through a series of tutorials and seminars, the course will focus on the most up-to-date discoveries in three areas of developmental biology. The areas reflect the expertise in the department. Winter term; R.A. Easteal.
EXCLUSION: ANAT-836*

BMED-807* Current Topics in Anatomy and Cell Biology
The topics will be chosen on the basis of special needs of the students, and must be approved by the Coordinator of Graduate Studies. Seminars.
EXCLUSION: ANAT-926*

BMED-808* Topics in Biology of Reproduction
This seminar course will cover current topics in male and female reproduction and pregnancy. The format includes critiques of original publications and attendance of and reports on the interdepartmental reproductive seminar series. Credit value: 3.0 credit units, spread over Fall and Winter terms (every second year).Attendance and reporting of interdepartmental reproductive group seminars: 12 h Overview lectures by professors on assigned topics: 12 h. Presentation and participation in student seminars: 12 h. Minimal quota of students for course to run: 4.
EXCLUSION: ANAT-808*

BMED-809* Principles of Drug Discovery and Development
An advanced course in which various aspects of the drug discovery and development

process, from molecules to community, will be studied. The course comprises lectures, discussion and student seminars, based on recent literature. Topics encompass medicinal chemistry approaches to drug discovery, receptor theory, mechanisms of drug action, drug metabolism, pharmacokinetics, pharmacogenetics, drug resistance, clinical trials, and regulatory affairs. 3 hour seminar. Given in years ending with an even number.
PREREQUISITE: Permission of the Graduate Program required. EXCLUSION: PHAR-811*

BMED-810* Protein Structure and Function
This course presents an integrated approach to the study of protein function. Topics include proteomic techniques in protein profiling, mass spectrometry, 2-D gel electrophoresis, yeast 2-hybrid analysis, protein chips, protein purification, imaging, surface plasmon resonance, calorimetry, bioinformatics and protein evolution, protein modifications and processing, interpretation and applications of 3-D structure, protein structure-function relationships. Offered jointly with BCHM-410 with additional work required. Three lecture hours per week. Fall term; Z. Jia.
PREREQUISITES: BCHM-310 or 315*/316*/317* or permission of the instructor. EXCLUSION: BCHM-410, BCHM-810

BMED-811* Advanced Molecular Biology
This course concentrates on the molecular biology of mammalian models particularly mechanisms involved in human diseases. The human genome project, forensic analysis, DNA diagnostics of human diseases, models of transcriptional and growth regulation and cancer, DNA repair, RNA processing and translation are all discussed. Emphasis on recent findings and course materials will be drawn from current reviews. Three lecture hours per week. (Offered jointly with BCHM-411* with additional work required.) Winter term; C. Mueller.
PREREQUISITE: BCHM-310 or 315*/316*/317* or permission of the instructor EXCLUSION: BCHM-411, BCHM-811*.

BMED-812* Advanced Neuroanatomy
This course includes the study of the structure and general function of the nervous system and is given jointly with ANAT-312*. Special topics assigned for seminars and essay projects. Fall term; lectures, laboratories and seminars. L. Mackenzie
EXCLUSION: ANAT-812*

BMED-813* Advances in Neuropharmacology
Recent advances in understanding neurotransmission and pharmacology in the central nervous system will be discussed. The current literature describing progress in

understanding molecular, cellular and behavioural aspects of brain function, and the impact of drugs and disease, will be examined. Seminars. Given in years ending with an uneven number.
PREREQUISITE: Permission of Graduate Program. EXCLUSION: PHAR-810*, NSCI-813*

BMED-814 Mammalian Physiology
A course for new graduate students with backgrounds in other disciplines. The functions of organs, body systems, and the integration of functions in the whole body. Students evaluated by regularly scheduled tests and take-home exams. Three, 1-hour lectures. Fall and Winter terms; D. Van Vugt. (6.0 credit units) PREREQUISITE: Admission to the DBMS graduate program and permission of the instructor.EXCLUSION: PHGY-814

BMED-815* Mechanistic Toxicology
An advanced, problem-based course focusing on current approaches to the study of mechanisms of chemical toxicity. Winter term; 3 hour seminars and tutorials. Given in years ending with an even number.
PREREQUISITE: PHAR-416* or equivalent. Permission of the Graduate Program required.EXCLUSION: PHAR-815*

BMED-816* Biology of Reproduction
A comprehensive overview of the cellular and molecular biology of mammalian reproduction. The first part of the course consists of lectures covering gametogenesis, fertilization, early embryo development and placentation. The second part involves student presentation of seminars and group discussion of current topics in reproductive biology. Clinical aspects of reproduction will also be covered. Offered jointly with ANAT-416*. Graduate students submit one major essay and give a seminar from a list of selected topics. Three hours lecture/seminar, Fall term. F.W.K. Kan.
PREREQUISITE: ANAT-215*/216* or ANAT-311, or ANAT-309* or permission of the Department. EXCLUSION: ANAT-816*

BMED-817* Mammalian Embryonic Development
Overview of mammalian development, emphasizing the cellular and molecular mechanisms that direct embryogenesis. The first 2/3 of the course consists of lectures on gastrulation, neurulation, establishment of the body axes, differentiation, sex determination, limb development, and organogenesis. The last 1/3 of the course involves student seminar presentations and group discussions of current topics in

developmental biology and teratology. Offered jointly with ANAT-417*. Students submit a major essay and give a seminar from a selected list of topics. Three hours of lectures/seminars per week. Winter term; R. Easteal.
PREREQUISITE: ANAT-416/ANAT-816*, or BMED-816*, or permission of the Department. EXCLUSION: ANAT-817*

BMED-818* Chemical Neuroanatomy
A contemporary and comprehensive assessment of the neurochemical features of the mammalian nervous system as they relate to development, function and disease. Winter term; 3 hour lecture/seminar. Offered alternate years.
PREREQUISITE: ANAT-312* or LISC-322* or permission of the Department.
EXCLUSION: ANAT-818*

BMED-820* Advanced Topics in Molecular Biology
Discussions and presentations on current topics in molecular biology. The emphasis will be on mammalian systems and will cover a wide range of topics relating to recent advances in molecular biology. Typical topics include gene regulation, replication, DNA repair, forensic analysis, human genomics and genetics. Marks are based on student presentations and essays typically in "News and Views" or Mini-Review formats. Three hours per week, presentations and discussions of original papers. Alternate years.
EXCLUSION: BCHM-820*

BMED-821* Mechanisms of Metabolic Control
Lectures and discussions on mechanisms of metabolic control. Recent research on a wide range of specific metabolic systems is examined critically. Emphasis is placed on biochemical factors and principles which play a role in the integration and control of metabolism. Lectures and seminars, three hours per week.
PREREQUISITE: BCHM-431 or equivalent. EXCLUSION: BCHM-822*

BMED-822* Cellular and Molecular Neuroscience
An in-depth study of the biophysical properties of neurons and diseases that affect the function of neurons and glia. Topics will include cable properties of dendrites, voltage- and ligand-dependent channels, and molecular mechanisms responsible for neuronal death and regeneration. The course will be based on lectures and student seminars of selected readings. Given concurrently with LISC-422*, with additional assignments for graduate students. Enrolment is limited. PREREQUISITE: LISC-322 with a minimum of B- (70%) or an equivalent course or permission of the instructor. EXCLUSION: ANAT-822*

BMED-823* Advances in Protein Structure and Function
This course consists of weekly presentations and discussions of recent advances towards the understanding of protein structure and function. Topics of discussion include novel approaches, techniques and concepts in the discovery of protein functions. Students will develop skills in literature research, critical evaluation of published work, effective presentation and discussion of papers. A specific theme, such as cell motility, may be used to illustrate research approaches employed to study biological systems in general. Three lecture hours per week. Alternate years.
PREREQUISITE: BCHM-410 or equivalent. EXCLUSION: BCHM-823*

BMED-824* Ion Channels of Excitable Cells
The electrophysiology and biophysics of neuronal and cardiac membranes; molecular biology, structure, and function of ion channels.Students will learn to critically evaluate scientific literature. Instructional format is primarily student-led seminars. Enrolment is limited.(Offered even years only; jointly with PHGY-424). PREREQUISITES: PHGY-214 (or equivalent) with a minimum of 65 percent (or equivalent) or permission of the course supervisor. EXCLUSION: PHGY-824*

BMED-825 Medical Neuroscience
A multidisciplinary graduate level course exposing students to the clinical aspects of neuroscience. Didactic lectures cover detailed organization of the nervous system with clinical implications. Laboratories review basic neuroanatomy and pathology. Clinical demonstrations expose students to several neurological disorders. Didactic lectures, laboratories, and clinical cases (up to 20 hr/week; 9 weeks total.) Winter term; M. Kawaja. PREREQUISITES: Enrolment in graduate program and involvement in neuroscience research.
EXCLUSION: ANAT-825

BMED-827* Advanced Topics in Neuroanatomy
This half-credit course will be offered to students who have completed ANAT-312* in their undergraduate studies in the Queen's Life Sciences Program. Through a series of tutorials and seminars, the course will focus on the most up-to-date discoveries in three areas of neuroanatomy. The areas reflect the expertise in the department. Fall term; L. MacKenzie.
EXCLUSION: ANAT-837*

BMED-828* Advanced Histology and Staining Techniques
An advanced mammalian histology course including advanced staining techniques in demonstrating various components of Histological sections. Winter term; L.W.

MacKenzie and S.C. Pang.
EXCLUSION: ANAT-838*

BMED-829 Selected Topics in Pregnancy
The course has two components. A 7 week (26 hour)series of discussions on assigned readings, selected readings and a 45 minute presentation by each student on medical and ethical aspects of obstetrics, gynaecology, endocrinology, population and gender health and psychology. The second component is a 50 hour Human Placenta Research Summer Workshop.
EXCLUSION: ANAT-839

BMED-830* Research Techniques in Cell and Molecular Biology
This course is designed to equip graduate students with modern research techniques in Cell and Molecular Biology.This intense 2-week course consists of 2-3 hours of lecture and 6-8 hours hands-on laboratory exercise per day.Techniques include light microscopy and immunohistochemistry, electron microscopy and immunocytochemistry, RNA, DNA and protein isolation, Northern and Western blot analysis, probe design, and conventional and realtime PCR. Summer term; offered in odd numbered years.
EXCLUSION: ANAT-840*

BMED-831* Cell Structure and Basic Tissues
For those with no histology background, an outline of basic vertebrate tissues. Extra assignments will be given to graduate students. Fall term. Lectures and laboratories in common with ANAT-309 in Fall Term. F.W.K. Kan
EXCLUSION: ANAT-311, ANAT-309 , ANAT-831*

BMED-832* Molecular Basis of Cell Function
This course provides an introduction to the signaling pathways that regulate key cellular functions such as growth and motility. The biochemical and structural principles that underlie the regulation of enzyme and protein activity in cells are emphasized. Topics include protein kinases and phosphatases, ubiquitin modification, G-protein-coupled receptors, growth factor receptors, scaffold and adaptor proteins, Ras GTPases, phospholipases, oncogenes, cyclic nucleotides, phosphoinositides, isoprenoids and steroid hormones.Offered jointly with BCHM 432. Three lecture hours per week. Fall term; G.P. Côté. PREREQUISITE: BCHM 310, or BCHM 315 and BCHM 316 and BCHM 317 for BCHM students; BCHM 310, or BCHM 315 and BCHM 316 for LISC students (or equivalent).
EXCLUSION: BCHM 432, BCHM 431, BCHM 433, BCHM- 831*, BCHM-832*, BCHM 833*, BMED-831*.

BMED-833* Selected Topics in Mammalian Histology
Detailed histological assessment of selected organs and tissues. Lectures and seminars. Winter term.
PREREQUISITES: ANAT-215* and 216* or ANAT-311 or ANAT-309* or ANAT-831* or BMED-831*.EXCLUSION: ANAT-833*

BMED-834* Principles and Techniques in the Teaching of Anatomical Sciences
A series of lectures and workshops illustrating modern teaching philosophy and technique specifically designed for teaching Anatomy in the Health Sciences. Fall term; R.A. Easteal and L.W. MacKenzie.
EXCLUSION: ANAT-834*

BMED-835* Advanced Procaryotic Structure and Function
In-depth analysis of the genetics, biochemistry, assembly and function of the major structures of the procaryotic cell. Emphasis on the experimental approaches in the current literature. (Offered in alternate years to BMED-836* and concurrently with MICR-435* with additional work required.) Fall term, two hours lecture, one hour tutorial.
EXCLUSION: MICR-835*

BMED-836* Microbial Genetics
A detailed description of the processes of heredity in bacteria including a discussion of gene structure and evolution, gene expression and its control, the exchange of genetic material in the microbial world and genetic engineering and its applications. The laboratory component will emphasize modern approaches to genetic engineering. (Offered in alternate years to BMED-835* and concurrently with MICR-436* with additional work required.) Fall term.
EXCLUSION: MICR-836*

BMED-840* Principles of General Pharmacology I
Lectures, tutorial sessions, laboratory project, and self-directed critical analysis of a current research area in Pharmacology. Topics include: principles of drug action, autonomic and autacoid pharmacology, and toxicology. 3 lecture hours and 3 laboratory hours. Fall term; T. Massey.
PREREQUISITE: Permission of the Graduate Program required.
EXCLUSION: PHAR-340*, PHAR-840*.

BMED-841* Current Topics in Biochemistry I
This course will focus on protein structure and function with special emphasis on

membrane proteins and selected soluble protein systems. The course will consist of lectures and presentations that will be organized around specific readings from the recent literature. A portion of the course will be devoted to membrane protein structure and function. Selected examples of structural and functional studies of soluble proteins will include enzymes and inhibitors; protein-protein interactions; protein engineering; high-throughput identification of enzyme substrates. Some instruction will be given in homology modeling and database analysis of gene products. Three hours per week, half course lectures and seminars. Fall term; Alternate years. B. Hill, P. Davies.
PREREQUISITE: BCHM 410* and BCHM 411* (or equivalent) and permission of co-ordinator.
EXCLUSION: BCHM-841*

BMED-842* Advanced Techniques in Digestive Sciences I
A laboratory-based course providing an advanced survey of state-of-the-art methodologies.This course is designed to give the student experience in cellular, molecular and whole tissue techniques with applications to digestive and related sciences.
PREREQUISITE: Undergraduate degree in biological, biochemical, or life sciences; permission of the course supervisor. Enrollment is limited.
EXCLUSION: PHGY-840*

BMED-843* Advanced Techniques in Digestive Sciences II
A laboratory-based course designed to explore in greater depth a sub-group of the techniques studied in BMED-842*/PHGY-840* and involving at least two full weeks of intensive laboratory work. The techniques will be chosen to complement the student's graduate research.
PREREQUISITE: PHGY-840* or BMED-842*. EXCLUSION: PHGY-841*

BMED-844* Gastrointestinal Physiology
The mechanisms and regulation of motor, secretory, digestive and absorptive functions of the gastrointestinal tract are considered.Students will be required to prepare and present reviews of original literature. Fall/winter terms.(Enrolment in both terms is required to achieve credit.) One hour lecture/week; 1 hour seminar alt. wks. M. Blennerhassett. Offered jointly with PHGY-444. PREREQUISITE: PHGY-214 or equivalent. Enrolment is limited.
EXCLUSION: PHGY-444, PHGY-844*

BMED-846* Advanced Physiology
An advanced course for honours and graduate students in which selected areas of physiology are studied in depth. Two hours seminar. Fall and/or Winter term.

PREREQUISITE: Eligibility for admission to this course will be determined by the student's experience in physiology and allied sciences.
EXCLUSION: PHGY-836*.

BMED-847* Research Projects in Anatomy and Cell Biology
An investigation into concepts and techniques in selected areas of research offered in the Department of Anatomy. Research projects carried out under the supervision of a staff member. Winter term; L. MacKenzie and Staff.
EXCLUSION: ANAT-847*

BMED-849* Principles of General Pharmacology II
Lectures, tutorial sessions, laboratory projects, drug literature evaluation, and self-directed critical analysis of a current research area in Pharmacology. Topics include: neuropsychopharmacology, cardiovascular-renal pharmacology, agents acting on the endocrine system, and chemotherapy. 3 lecture hours and 3 laboratory hours. Winter term; N. Philbrook.
PREREQUISITE: Permission of the Graduate Program required. EXCLUSION: PHAR-450*, PHAR-850*.

BMED-850* Principles of Molecular Virology
Further study of contemporary virology using the textbook as a guide to particles, genomes, replication, expression, infection, and pathogenesis. Emphasizing reading and writing to develop skills in observation and critical thinking, important attributes in understanding the scientific method. (Offered in alternate years to BMED-851* and concurrently with MICR-450* with additional work required.) Three lecture hours, three seminar hours.
EXCLUSIONS: MICR-450*, MICR-850*

BMED-851* Selected Topics in Viral Pathogenesis
The nature of selected animal virus groups and their interactions with the host in disease production with special emphasis on the pathogenesis of tumor and human immunodeficiency viruses will be considered. (Offered in alternate years to BMED-850* and concurrently with MICR-451* with additional work required). Two lecture hours, two seminars hours, one tutorial hour. Fall term; L. Raptis.
EXCLUSIONS: MICR-451* , MICR-851*

BMED-852* Virus Infection and Immunity
The molecular basis for virus pathogenesis including the host immune response to virus infection, and viral countermeasures. Emphasis will be on viral infections that result in gastrointestinal, haematological, neurological, and respiratory disease. Tutorials will

focus on discussion of current and seminal literature. Offered jointly with MICR-452. Fall term; B. Banfield.
PREREQUISITES: MICR-221, MICR-360/860 or BMED-877 or equivalents.
EXCLUSIONS: MICR-452, MICR-852*

BMED-853* Cellular and Molecular Cardiovascular Sciences
An advanced inter-disciplinary course studying the anatomy, pharmacology and physiology of the cardiovascular system at the molecular and cellular level. The course is comprised of lectures, discussion and student seminars based on recent literature. 3 hour seminar. Equivalent of CRSS-456. Winter term; D.H. Maurice.
PREREQUISITE: Undergraduate degree in Life Science or equivalent or permission from department.
EXCLUSIONS: ANAT-853*, PHAR-853*, PHGY-853*, CRSS-456.

BMED-854* Cardiovascular Sciences
A study of the anatomy, pharmacology and physiology of the cardiovascular system based on lectures, seminars, laboratories and selected readings (same as PHAR-854 and PHGY-854). Topics include structure-function of the heart and blood vessels, mechanisms of signal transduction, drug effects on second messenger systems, the cardiac pump, integrated cardiovascular control, arterial oxygen transport, control of blood pressure and hypertension. Offered jointly with LISC-454. Additional work prescribed for graduate students. Enrolment limited. Lectures, seminars and laboratories. Fall term; M. Adams PREREQUISITE: OR COREQUISITES: ANAT-311, ANAT-309*, PHAR-340/450 and PHGY-312 or their equivalent.

EXCLUSIONS: ANAT-854*, PHAR-854*, PHGY-854*, LISC-454*.

BMED-855* Respiratory Physiology
An advanced course examining respiratory mechanics, gas exchange, acid-base balance and the neural control of breathing. Students are required to prepare and present reviews of literature and interpret results of laboratory experiments. 2 hours lecture/seminar or 6 hours laboratory. Offered jointly with PHGY-355. Fall term; J.T. Fisher and N. Domnik. PREREQUISITE: A minimum of C (2.0) in PHGY-214 or equivalent.
EXCLUSION: PHGY-855*, PHGY-355

BMED-856* Practicum in Virology
In-depth analysis of experimental approaches for the study of insect viruses in cell culture and practical hands-on laboratory experience through a research project. (Offered concurrently with MICR-455 with additional work.) Enrollment may be

limited.
PREREQUISITES: MICR-221, BIOL-205, MBIO-318/BCHM-218 or equivalent.
EXCLUSION: MICR-855*

BMED-860* Fundamentals of research
The objective of this course is to expose graduate students to the fundamental issues involved in academic research, including safety, ethics, statistics, command of the literature and drafting of a research proposal. Fall and Winter terms; S. Pang and G. Côté.
EXCLUSION: NSCI-800*

BMED-862 Cellular techniques
The objective of this course is to familiarize graduate students with the principles and practice of cutting edge technologies used in cell culture models for biomedical and molecular sciences research. (Weight= 1.0 credit unit).

BMED-863 Protein and peptide analysis
The objective of this course is to familiarize graduate students with the principles and practice of cutting edge technologies used for protein and peptide analysis involved in biomedical research. (Weight= 1.0 credit unit.)

BMED-864 Nucleic acid analysis
The objective of this course is to familiarize graduate students with the principles and practice of cutting edge technologies used for nucleic acid analysis involved in biomedical and molecular sciences research. (Weight= 1.0 credit unit). Winter term; Y. Tse.

BMED-865 Cell imaging analysis
The objective of this course is to familiarize graduate students with the principles and practice of cutting edge technologies used for cell imaging analysis involved in biomedical and molecular sciences research.(Weight= 1.0 credit unit.)

BMED-866* Bioinformatics
This course provides hands-on training in analytical methods for extracting and interpreting biologically relevant information from various biomedical datasets. Through a combination of lectures and labs, we will cover hypotheses driving "BIG DATA" research and computing methods for testing these hypotheses using examples of real biomedical datasets. (Offered jointly with CISC-875).
EXCLUSION: CISC-875

BMED-867 In vivo laboratory techniques
The objective of this course is to familiarize graduate students with the principles and practice of cutting edge technologies used in in vivo laboratory techniques. (Weight= 1.0 credit unit.)

BMED-868 Clinical neuroscience methods
The objective of this course is to familiarize graduate students with the principles and practice of cutting edge technologies used in clinical neuroscience methods involved in biomedical research. (Weight= 1.0 credit unit).
EXCLUSION: NSCI-868

BMED-869 Methods in reproduction
The objective of this course is to familiarize graduate students with the principles and practice of cutting edge technologies used in reproductive and developmental biology involved in biomedical and molecular sciences research. (Weight= 1.0 credit unit) Fall term; C. Tayade.

BMED-870 Analysis of small molecules
The objective of this course is to familiarize graduate students with the principles and practice of cutting edge technologies used for the analysis of small molecules involved in biomedical and molecular research. (Weight= 1.0 credit unit).

BMED-877* Immunology
The general principles and mechanisms of immune reaction. Immunochemical and immunobiological aspects of antibody formation and cell-mediated immunity in health and disease will be considered. (Offered concurrently with MICR-360 with additional work required.) Three lecture hours. Fall term; Basta and K. Gee.
EXCLUSION: MICR-860*

BMED-878* Microbial Pathogenesis
A comprehensive course emphasizing the major microbial and viral groups occurring in human and animal disease. The basic mechanisms involved in host-parasite interrelationships as well as current effective methodology used in their control will be studied.
EXCLUSION: MICR-920*

BMED-879* Advanced Bacteriology
Advanced studies in contemporary bacteriology emphasizing important topics through analysis of the current literature in oral and written formats.Three seminar hours. Fall

term; K. Jarrell
EXCLUSION: MICR-930*

BMED-880* Advanced Virology
Advanced general virology with a special emphasis on virus structure, replication patterns under permissive conditions and in persistent infections. Molecular aspects of gene duplication, expression and modulation are emphasized, as well as a consideration of viruses as expression vectors.Three lecture hours. Fall term; L. Raptis.
EXCLUSION: MICR-950*

BMED-881* Advanced Immunology
An advanced course emphasizing the main areas of contemporary immunology. Fall term; S. Basta and K. Gee.
EXCLUSION: MICR-960*

BMED-882* Proteomics and metabolomics
'Omics' technologies allow the components of a living organism to be appreciated in their entirety by providing insight into gene expression, protein synthesis and function, and metabolic networking. This course builds upon concepts presented in undergraduate courses by covering the basic principles of proteomics and metabolomics and their application in the new systems biology 'omics' approach to scientific discovery. This course will emphasize both the methodologies used in proteomics and metabolomics, as well as their applications in both research and medical diagnostic settings. Coursework will be completed primarily online as modules, interactive discussions, and assignments. An individual in-person presentation/seminar will be required. Offered jointly with BMED-482.
PREREQUISITES: BCHM 315/3.0 and BCHM 316/3.0, or BCHM 310/9.0 or equivalent.
EXCLUSION: BMED-482

BMED-884* Essential Research Skills
Students learn essential research skills such as preparation and critical review of a research proposal, basic theory of physiological instrumentation, histology, and other state-of-art techniques.
EXCLUSION: PHGY-884*

BMED-889 Practicum
EXCLUSION: ANAT-889

BMED-894* Neuroendocrinology
Students are exposed to an in-depth study of selected topics in neuroendocrinology and

neuroendocrine techniques. Neuroendocrinology refers to the neural control of endocrine and autonomic function. Areas of focus will include CNS control of cardiovascular function, reproduction, and appetite. In addition, students will learn to critically evaluate scientific literature. Instructional format is primarily student- led seminars. (Offered odd years; jointly with PHGY-494).
PREREQUISITE: PHGY-214 or equivalent. EXCLUSIONS: PHGY-894*, PHGY-494.

BMED-897* Research Seminars
The objective of this course is to expose graduate students to cutting edge research and provide them the opportunity to deliver research seminars in a clear and concise fashion. This course spans a two year period. Fall, Winter, and Spring. B. Banfield.

BMED-898 Master's Independent Project Report
As a component of the curriculum for the Pattern II Program in Anatomical Sciences, students will complete an independent studies project under the supervision of departmental faculty member. Students will summarize their work in a written report that will be reviewed by a committee and orally defended.
EXCLUSION: ANAT-898

BMED-899 Master's Thesis Research
EXCLUSIONS: ANAT-899, BCHM-899, MICR-899, PHAR-899, PHGY-899

BMED-999 Ph.D. Thesis Research
EXCLUSIONS: ANAT-999, BCHM-999, MICR-999, PHAR-999, PHGY-999

BIOMEDICAL ENGINEERING

CBME-801* Topics in Biomedical Engineering
This course covers the skills needed to plan and present Biomedical Engineering research. Topics include hypothesis and research question generation, literature reviews, statistical methods to design experiments, proposal writing, data presentation and interpretation, information design, scientific speaking and article writing. Instructors: Biomedical Engineering faculty.

CBME-802* Biomedical Engineering Seminar
Illustrate all areas of Biomedical Engineering research and practice; emphasis on breadth and interdisciplinary aspects; preparation, delivery and audience participation in oral presentations; the course links students from departments participating in the Collaborative Graduate Program in Biomedical Engineering; opportunities are provided to develop and refine presentation skills, to give and receive constructive criticism, and to pose and respond to questions. Instructors: Biomedical Engineering faculty.

BIOMEDICAL INFORMATICS

BMIF-801* Programming Skills and Tools for Processing Biomedical Data
The objective of this course is to provide graduating health science students hands-on training in computer programming languages and tools to familiarize them with the principles and practice of cutting edge technologies for bioinformatics used in biomedical and molecular sciences research. Prerequisite: none

BMIF-802* Biomedical Data Analysis
The objective of this course is to provide graduating health science students hands-on training in the analysis of biomedical datasets to familiarize them with the principles and practice of cutting edge technologies for bioinformatics used in biomedical and molecular sciences research. Prerequisite: none

BMIF-803* Data Mining and Applications
The objective of this course is to provide graduating health science students with hands-on training in data mining to familiarize them with the principles and practice of cutting edge technologies for bioinformatics used in biomedical and molecular sciences research. Prerequisite: none

BMIF-898 Master's Project
A major programming project is undertaken under the supervision of a School member. The presentation of a seminar to describe the project is required. (6.0 credit units)

CHEMICAL ENGINEERING

NOTE Most courses are one term in length and are 3.0 credit units in weight; however, modules are 6-weeks in length and are 1.5 credit units in weight. An asterisk denotes a course of 3.0 credit units. Not all courses are offered in every session.

APSC- 896* Engineering Leadership and Innovation
This course is designed to develop a range of skills essential for engineering professional practice in both the public and private sectors. The course will focus on; Engineering Leadership and Innovation including its application in project management. The course content will be presented through lectures, case studies, panel discussions and an interactive serious game.

CHEE-801* Strategies for Process Investigations
The statistical design of experiments and the analysis of data in process investigations are considered. Empirical modelling of process behaviour is studied. Applications of factorial and fractional factorial experimental designs in screening studies and methods of response surface exploration are examined. Traditional North American approaches to quality and productivity improvement are compared with those practiced in Japan.N. Hudon.
PREREQUISITE: CHEE-209 or equivalent.

CHEE-803* Transport Phenomena
Basic concepts, generalized control volume analysis and balance equations. Constitutive equations, kinetic models, thermodynamic considerations, and prediction equations for transport properties. Coupled transport processes: Onsager's theory; forced diffusion; and thermo-chemical, thermo-electric, and electro-chemical effects. Special phenomena in biological and macromolecular systems. Phenomena at surfaces. Effects of flow and chemical reaction. Analogies between energy, material and momentum transport. Examples in the analysis of complex problems. J. Giacomin.

CHEE-807* Current Topics in Chemical Engineering
Selected topics in chemical engineering including chemical reaction engineering, combustion, biochemical engineering, process control, environmental engineering, applied statistics, polymer reaction engineering, polymer processing, fluidization and turbulence. Only topics not covered in other graduate courses will be included. Topics will vary depending on the instructor(s).
PREREQUISITE: Permission of the Instructor.

CHEE-809* Colloid and Surface Phenomena
The course provides in-depth coverage of the fundamentals of colloidal interactions (e.g., stabilisation, adsorption, self-assembly) and the techniques currently applied for their assessment. Current and emerging colloids-related technologies, with emphasis on nano-scale engineering (self- and directed-assembly of nanostructured materials, photonic crystals, sensors) will also be covered.

CHEE-810* Fuel Cell Systems: Design and Analysis
This course will examine the design of fuel cell systems for a variety of applications ranging from large multi-megawatt stationary power systems to milliwatt scale portable electronics systems. Examples will be drawn from actual demonstration and pre-commercial prototype systems operating on a range of fuels including conventional hydrocarbons with integrated external fuel processing subsystems, anaerobic digester gas with external clean-up and preprocessing, natural gas fuelled systems with direct and indirect reforming, direct methanol fuel cells and hydrogen fuel cells. The design of combined heat and power systems (CHP) for large scale industrial applications and for small-scale residential applications will also be examined. In each of these case studies the impact of system configuration and individual component performance on efficiency will be examined and strategies for optimizing performance and minimizing complexity will be developed. In addition the effect of system design on greenhouse gas emissions will be considered. The course will consist of three design projects of increasing complexity and a final examination. Students will be expected to give a presentation on their final design project.

CHEE-811* Mathematical Modeling of Chemical Processes
The steps that are required to build comprehensive mathematical models are examined. These steps include: definition of the intended model use and user requirements; formulation of model equations; determination of model parameters from correlations and experimental data; parameter sensitivity and estimability analysis; solution of model equations using numerical techniques; model validation; and potential model applications. While the focus is on the development of fundamental models, empirical modeling techniques are also discussed. Process examples are selected from: reactive distillation, polymerization, bioreactors, heat exchangers, and fuel cells. Students complete a mathematical modeling project related to their research interests. PREREQUISITE: Permission of the Instructor.

CHEE-820* Topics in Advanced Process Control
Researchers at Queen's and visiting professors will present selected topics in advanced process control, including control of distributed parameter systems, control of

bioprocesses, control of polymer reactors, and hybrid systems. P. Nomikos.
PREREQUISITE: Permission of the Instructor.

CHEE-821* Process Control II
This is a second course in process control techniques. Topics covered will include: frequency response methods for stability analysis and controller design, deadtime compensation (e.g., Smith predictor), feedforward/ cascade control, the Internal Model Control formulation, introduction to multivariable control, and interaction analysis using the concept of relative gain. Specific applications to chemical processes will be presented. (Offered jointly with CHEE-434, with additional lectures and assignments.)
PREREQUISITE: CHEE-319 or permission of the instructor.

CHEE-822* Model-Based Control
The course focuses on the use of explicit process models for multi-variable controller design. Linear and nonlinear control approaches are discussed in both discrete and continuous time formulations. Stability, performance and robustness issues are addressed. The role of observers for state estimation is considered. M. Guay.
PREREQUISITE: CHEE-319 and -821 or equivalent.

CHEE-824* Nonlinear Regression Analysis and Applications
The role of statistical design and analysis in chemical process modelling; justification of least squares estimation; geometrical interpretation; algorithms for nonlinear least squares estimation; role of transformations; analysis of multiresponse data; experimental designs for model discrimination; experimental designs for precise parameter estimation.
PREREQUISITE: CHEE-418/801 or equivalent.

CHEE-825* System Identification
The course focuses on the theory and application of linear time series methods for system identification. Time domain and frequency domain methods for analyzing dynamic data will be presented. Standard process plus disturbance models encountered in the identification literature will be investigated from both statistical and physical perspectives. Methods for structural identification, incorporation of exogenous variables, parameter estimation, inference and model adequacy will be examined in detail. The design of dynamic experiments and incorporation of model uncertainty into the intended model and use, such as prediction or control, will be discussed. Assignments will include the analysis of industrial data sets. Dynamic modeling using neural networks and nonlinear time series methods will be introduced.
PREREQUISITE: CHEE-418/801 and CHEE-434/821 or equivalent.

CHEE-827* System Optimization
A survey of optimization problems is made and mathematical procedures for their solutions are discussed. Comparisons of optimization techniques for various classes of problems are made using industrial examples and computer studies. Both linear and nonlinear programming methods are studied. Topics include the role of optimization, definitions of objective functions and constraints, conditions for existence of an optimum; one-dimensional strategies; analytical procedures for unconstrained and constrained multi-dimensional problems, numerical procedures for unconstrained and constrained multidimensional problems, introduction to multistage optimization.
PREREQUISITE: Permission of the instructor

CHEE-828* Polymer Reaction Engineering
The fundamentals of polymerization kinetics are reviewed. The equations for batch and continuous flow reactors are developed and used in the calculation of polymerization rate and polymer quality measures. Process parameters which affect reaction rate, chain composition and molecular weight distribution are examined, and the design of polymer reactor systems is discussed. Consideration is also given to the problems of reactor design in heterophase polymerization. R.A. Hutchinson

CHEE-835* Turbulent Diffusion in the Environment
Turbulent diffusion from both air and water emission sources are considered in this course. Fundamental concepts of diffusion and the statistical theory of turbulent flows are reviewed. Topics include simple modelling systems, dispersion in shear flows, line sources, time averaging of diffusion phenomena and the effect of density gradients.

CHEE-837* Transport & Kinetics with Application to Fuel Cells
The fundamentals of transport phenomena and reaction kinetics are considered and applied to fuel cells, with a view to a mechanistic understanding of fuel cell operation and limitations. Material covered includes the basic axioms of mechanics (conservation of mass, momentum, energy and charge) presented in indicial notation and applied to porous media. Emphasis is placed on the description of porous materials and the implications of porous media on transport, including the notion of effective transport coefficients. Ion transport in solid and polymer electrolytes due to electrochemical potential differences is considered. Diffusion models covered include Fick's law, Stefan Maxwell and Knudsen. Electrochemical reaction kinetics and mechanism are covered including rate-limiting steps, exchange current density and the fundamental definition of over potential. The course will include individual projects.
EXCLUSION: MECH 837*

CHEE-840* Introduction to Learning and Teaching in Engineering
This course is intended to help students understand the basic issues of learning and teaching in engineering disciplines from a practical perspective. We will consider teaching practices which facilitate the development of knowledge, skills and professional attitudes in engineering students. We will explore all common forms of teaching e.g. laboratory classes, tutorials, lectures, project work as well as more innovative forms of teaching. Drawing on recent engineering education and education literature this course will be discussion based, with key weekly readings.

CHEE-841* Engineering Education: Theory into Practice
This course is intended for students who are interested in developing their understanding of pedagogy within engineering. It is framed around the idea of a scholarship of teaching – basing teaching on the research base of how students learn. It forms a useful base for anyone who is teaching or is interested in pursuing an engineering teaching career. It draws on recent education literature from 1970s to the present within the 'experiential student learning' field of educational development and research and applies this to an engineering context. We will explore examples of research into students' experiences of learning and how this informs the way we design curricula, teach and assess engineering students. Participants in the course will be expected to apply the theory to their own engineering teaching practices by conducting a term long project.

CHEE-872* Polymeric Biomaterials
This course is designed to appeal to students in all fields of this interdisciplinary field, from biomechanics to polymer chemistry. It will provide a thorough background in the underlying fundamental biological and polymer science principles involved in the use of polymers as medical materials. Topics include surface and bulk polymer properties, applications of polymeric biomaterials, the biological principles that dictate host response to a material, and biopolymer degradation.
PREREQUISITE: Permission of the Instructor.

CHEE-874* Tissue Engineering
This course is designed as a graduate level introductory course in tissue engineering: the interdisciplinary field that encompasses biology, chemistry, medical sciences and engineering to design and fabricate living systems to replace damaged or diseased tissues and organs. Topics to be discussed include: tissue anatomy, basic cell biology, cell scaffolds, cell sources and differentiation, design considerations, diffusion and mass transfer limitations, effects of external stimuli, bioreactors, methods used to evaluate the engineered product(s), and implantation. Case studies of specific tissue engineering applications will also be discussed. Students will be required to participate in as well as

lead discussions on the course material as well as relevant journal articles. No previous background in biology is required.

CHEE-882* Bioreactor Design
This course examines the important factors in the design and operation of stirred tank bioreactors. A variety of biokinetic models are examined and used in the design of ideal and non-ideal bioreactors. The effect of the rheology of fermentation broths on mass transfer, mixing, power requirement, etc. is considered, along with Residence Time Distribution Analysis as a tool for quantifying non-ideal behaviour. Novel fermentor designs and immobilized enzyme/cell systems are discussed. Scale-up criteria are examined.
PREREQUISITE: CHEE-380 or equivalent courses or experience.

CHEE-883* Bioseparation Processes
Downstream processing techniques are studied which exploit the unique properties of proteins and which can separate a particular protein from a multicomponent protein mixture. Areas to be covered include the separation and purification of proteins by precipitation, by adsorption and in solution. Specific industrial and clinical bioseparation procedures, such as ultrafiltration and dialysis, will also be considered.
PREREQUISITE: Permission of the instructor.

CHEE-884* Bioremediation
Bioremediation as an option to treat contaminated soils, ground water, fresh water and the marine environments. Advantages and disadvantages of bioremediation compared to nonbiological processes. Factors affecting choice of in situ or ex situ processes. Assessment of biodegradability; biostimulation vs. bioaugmentation; mineralization vs. partial degradation; factors affecting microbial activity (choice of electron acceptor, toxicity of pollutant, C/N/P ratio, co-substrates, soil humidity, pH and temperature); bioavailability of pollutant. Biodegradation of specific contaminants (eg. diesel fuel, polychlorinated biphenyls, dyestuffs, aromatic and polyaromatic hydrocarbons) will be studied in detail. J. Ramsay/ P. Champagne
PREREQUISITE: Permission of the instructor.

CHEE-885* Current Topics in Biochemical Engineering
The course surveys recent advances in Biochemical Engineering, through lecture material and seminars based on recent published advances, critical analysis and in depth review of recent published literature, academic and industrial guest speakers outlining advances in their respective research areas and through student presented seminars on assigned papers or topics.

CHEE-887* Cellular Bioengineering
This course will focus on applied cellular and molecular biology for the development of cell-based therapeutics in regenerative medicine.Emphasis will be placed on how engineering principles can be applied, in combination with an understanding of mammalian morphogenesis and physiology, to control and manipulate cellular responses in vitro and in vivo.

CHEE-890* Advanced Polymer Structure, Properties and Processing
The first half of the course examines the elements of polymer science that relate to engineering applications. The second half examines polymer processing operations with an emphasis placed on the analysis of polymer flow. Specific topics include the rheology of thermoplastic melts, viscoelasticity, constitutive equations and polymer blends.

CHEE-897 Seminar
Graduate students working on theses must give a seminar on their research. The seminar carries no course credit but all graduate students are required to attend.

CHEE-898 Master's Project

CHEE-899 Master's Thesis Research

CHEE-901 Principles and Applications of Polymer Rheology
Rheology provides a valuable tool for the assessment of the processability of polymers in various operations, as well as the identification of their structure. This 6 week (3 hours/week) module will discuss the fundamental relations between the rheology and structure of polymers and the principles of rheometry. (1.5 credit unit weight)

CHEE-902 Bulk and Solution Polymerisation Processes
This course is intended to help the student to understand how the fundamentals acquired in CHEE 828, are used in the design and operation of melt or solution polymerisation processes of different types (chemistries, operational modes, etc.) Emphasis will be placed on reactor design and operation, but separation technology for product purification will also be studied. Case studies of specific commodity polymers will be used to illustrate the important concepts. (1.5 credit unit weight)

CHEE-903 Polymerisation in Dispersed Media
This is a product-focused course that will include use different (non-polyolefin) concrete examples to help the students understand the reasons for producing polymer in dispersed media, the types of product one can make and the relationship between

process operation and polymer structure. Emphasis is placed on reactor design, advanced modelling of dispersed phases systems, and issues related to industrial production such as characterisation, scale-up and control. (1.5 credit unit weight). M. Cunningham.

CHEE-906 Entrepreneurship for Chemical Engineers
This course module focuses on assessing entrepreneurial opportunities in chemical engineering. This includes: business opportunity screening, IP issues, market and competitive analysis, regulatory/ legal issues and financial analysis. Students evaluate the commercial potential of a technology or opportunity of their choice. (1.5 credit unit weight)

CHEE-907 Current Topics in Chemical Engineering
Selected topics in chemical engineering including chemical reaction engineering, combustion, biochemical engineering, process control, environmental engineering, applied statistics, polymer reaction engineering, polymer processing, fluidization and turbulence. Only topics not covered in other graduate courses will be included. Topics will vary depending on the instructor(s). (1.5 credit unit weight)

CHEE-908 Green Engineering
This 6 week (3 hours/week) module will discuss the fundamental principles of green engineering in the context of a chemical sciences environment. Students will learn how to apply green chemistry principles and efficient process design principles (with respect to both energy and materials consumption) to ensure new or existing processes minimize their overall impact on the environment. (1.5 credit unit weight)

CHEE-909 Colloid and Surface Science Fundamentals
Various established theories on Colloids (e.g., DLVO, XDLVO) will be analyzed and subsequently used as tools towards the understanding and prediction of phenomena relevant to contact angles, surface wetting, emulsion or particle dispersion stability, and surfactant self -assembly.(1.5 credit units). A. Docoslis.

CHEE-910 Special Topics in Colloid and Surface Phenomena
This course provides an in-depth examination of selected topics in colloids of great interest to sciences and technology, such as emulsion stability, adsorption, particles electrokinetics and light scattering. In-class discussions and presentations, literature reviews, and individual projects, will provide graduate students with the solid fundamental knowledge and critical thinking required to approach problems related to these phenomena in a rigorous manner. This is not intended to be an introductory

course in Colloids. Prior knowledge of Colloids and Surface Science principles is required. (1.5 credit units).A. Docoslis

CHEE-911 Microscale Transport Phenomena
This 6 week (3 hours/week) module will provide in-depth coverage of microscale transport phenomena motivated by the emerging fields of Microfluidics and Lab-on-a-Chip. During this course, students will intensify and expand their knowledge of the fundamentals of heat, mass, charge and momentum transfer with emphasis on microscale geometries. The difference of macro- and microscale transport phenomena and the limitation of classical mechanics will be highlighted by scaling analysis. Additionally, an introduction into the fundamentals of selected electrohydrodynamic phenomena will be given. (1.5 credit units). D. Barz.

CHEE-912 Applied Lab-on-Chip Technologies
This 6 week (3 hours/week) module will provide an overview on the latest developments, fabrication techniques, and principles of operation of contemporary micro- and nanotechnologies used in lab-on-chip (LOC) type platforms. Small-scale subunit operations required in LOC systems, equally relevant across several disciplines in both life sciences and engineering fields, will be covered in detail. The knowledge acquired in these topics will be used during the last part of the course to analyze the design of LOC-based systems in key applications in different areas including biosensing, biotechnology and emerging energy technologies. (1.5 credit units) C. Escobedo.
PREREQUISITE: CHEE-911, or permission of instructor

CHEE-927 Global Optimization
This 6-week course introduces global optimization principles and methods for nonconvex continuous or mixed-integer programs, which can arise from a wide range of process systems engineering problems. The course consists of three parts. The first part discusses convex sets, convex functions, and Lagrangian duality theory. The second part introduces classical branch-and-bound based global optimization methods, along with convex relaxation and domain reduction techniques. The third part gives an overview of decomposition based large-scale global optimization. This course, although placed in the Department of Chemical Engineering, is designed for graduate students from across Queen's University. (1.5 credit units).
PREREQUISITES: CHEE-827* or permission of the instructor.

CHEE-990 Structure-Property Relationships of Polymer Materials
This six-week graduate module provides students with background in physical polymer science as it relates to the formulation of materials to satisfy engineering

applications. Starting from the characterization of molecular weight and composition distributions, the fundamentals of phase transitions, solubility, adhesion and thermo-oxidative stabilization are discussed. (1.5 credit unit weight). M. Kontopoulou.
EXCLUSION.: CHEE-490

CHEE-991 Introduction to the Processing and Rheology of Polymeric Materials
This six-week graduate module examines polymer processing operations. Specific topics include extrusion and injection moulding, modeling approaches, polymer blends and composites. Particular emphasis is placed on the analysis of polymer flow. Principles of the rheology of thermoplastic melts and rheometry are presented. (1.5 credit unit weight). J. Giacomino.
EXCLUSION: CHEE-490

CHEE-992 Polymeric Biomaterials
This six-week graduate module provides a thorough background in the underlying fundamental biological and polymer science principles involved in the use of polymers as medical materials. (1.5 credit unit weight).

CHEE-999 Ph.D. Thesis Research

CHEMISTRY

All courses are six week modules and are equivalent to one half of a term course (1.5 credit units in weight) and indicated by the ** with the exception of CHEM-801*, CHEM-802*, CHEM-899, CHEM-910* and CHEM-999.

Students should review the department's website for the most current list of courses available and terms offered. The list of courses offered in 2018-2019 may be found on the Department of Chemistry's web page.

CHEM-801* Safety in the Laboratory
An introduction to safety procedures and the safe handling of chemical compounds and equipment in the laboratory. This non-credit course is offered every year to students from other departments. Fall. P. Jessop

CHEM-802* Chemistry Seminar Program
Based on the regular departmental seminar program offered during the fall, winter and summer, this non-credit course is to be taken every year by all graduate students. As part of this course M.Sc. and Ph.D. students must attend a minimum number of departmental seminars. In addition, Ph.D. students will present one seminar on their research prior to their thesis submission. Fall/Winter/Summer. A. Ross (Seminar Coordinator). http://www.chem.queensu.ca/departmental-seminar-series

CHEM-803* Principles of Scientific Communication
Principles of scientific verbal and written communication in Chemistry. Topics include computer literature searching, scientific writing techniques (for research reports, journal manuscripts, and theses), oral and poster conference presentations, and communication skills as teaching assistantships. Assignments will include completion of online course modules on scientific communication from MyGradSkills.ca. Winter. D. Macartney.

CHEM-805 NMR Methods for Structure Identification**
An introductory course on identification of organic and organometallic compounds using multinuclear NMR techniques. The focus will be on practical applications for those working in synthetic chemistry. Fall. F. Sauriol.

CHEM-806 Multidimensional NMR techniques**
Advanced methods for the identification of organic and organometallic compounds using multinuclear NMR techniques. The focus will be on practical applications for those working in synthetic chemistry. Fall. F. Sauriol. PREREQUISITE: CHEM-805*.

CHEM-810 Materials Characterisation Methods**
A survey of materials characterisation methods with an emphasis on practical applications in materials and polymer chemistry.Techniques will include electron microscopy, scanning probe methods, photoelectron & Auger spectroscopy, cyclic voltammetry and powder X-ray diffraction methods. Fall. P. Loock.

CHEM-814 Carbohydrate Chemistry**
An introduction to the chemistry of carbohydrates: Monosaccharides and their derivatives; Strategies for making glycosidic bonds and synthesizing oligosaccharides; Chemical and biochemical aspects of complex oligosaccharides and glycoconjugates. (1.5 credit units)

CHEM-817 Industrial Synthesis of Fine Chemicals**
Industrial processes for the synthesis of vitamins, pharmaceuticals and related fine chemicals represent practical solutions to complex problems in chemical synthesis; selected case studies will be examined. Not offered 2018-19.

CHEM-819 Current Topics in Physical and Theoretical Chemistry**
A critical review of the current research literature with strong emphasis on student discussions and presentations. Topics are selected from recent examples in the literature and may include light-matter interactions, nanostructures, surface probe studies, computational methods and other examples in physical chemistry and molecular physics. Not offered 2018-19.

CHEM-820 Magnetic Resonance**
This course will cover subject areas of magnetic resonance spectroscopy including nuclear magnetic resonance (NMR), electron paramagnetic resonance (EPR), nuclear quadrupole resonance (NQR) and magnetic resonance imaging (MRI). Not offered 2018-19.

CHEM-834 Molecular Orbitals and Structures**
An overview of modern computational techniques and software for the determination of molecular orbitals and structures. Intended as a general introduction for graduate students of all disciplines. Not offered 2018-19.

CHEM-838 Numerical Methods in Chemistry**
Topics include numerical integration, numerical treatment of differential equations, interpolation, Fourier transforms, regression. Concepts in Fortran programming are also introduced. Winter. T. Carrington.

CHEM-840 Modern Mass Spectrometry**
An introduction to modern mass spectrometry. Instruments and the various methods of forming or introducing ions into the gas phase will be discussed and mass spectra will be interpreted. Fall. D. Beauchemin.

CHEM 842 Applications of Modern Mass Spectrometry**
This module focuses after a brief review of ionisation techniques and current mass spectrometric equipment on novel hybrid-tandem-MS instruments and current applications of mass spectrometry in different areas of the life sciences. Topics include, but are not limited to, atomic composition determination, identification methods for proteins and determination of post-translational modifications such as phosphorylation or glycosylation now widely used in the evolving field of proteomics, studies of non-covalent biomolecule interactions and new high-throughput screening techniques as employed in drug or catalyst development. Not offered 2018-19.

CHEM-850 Polymer Physical Chemistry**
Specific properties of polymers (glass transition, crystallinity, poly-dispersity, etc.) and their dependence on macromolecular structure and isomerism. Not offered 2018-19.

CHEM-853 Polymer Synthesis**
Polymer synthesis overview: step and chain polymerization (free-radical, ionic and insertion mechanisms) and reactions on polymers. Examples of polymers and their uses. Not offered 2018-19.

CHEM-854 Polymer Characterization in Solution**
Dilute polymer solutions and phase separation behaviour. Polymer characterization including vapour pressure lowering, ebulliometry, osmometry, viscometry, gel permeation chromatography, light scattering and ultracentrifuge methods. Not offered 2018-19.

CHEM-855 Polymer Characterization in the Solid State**
An overview of various methods to characterize polymers in the solid state, including thermal analysis, spectroscopy (infrared, ultraviolet-visible, and nuclear magnetic resonance), microscopy, and mechanical analysis. Not offered 2018-19.
PREREQUISITE: CHEM-850** or permission of the instructor.

CHEM-857 Engineering Properties of Polymers**
Relationships between macromolecular structure, the physical properties of polymeric materials, and applications. Topics include conformation and configuration, the glass

transition, rubber elasticity, flammability, viscoelasticity, yielding, and fracture. Case studies in material selection will be included. Not offered 2018-19.

CHEM-860 Symmetry and Structural Determination by X-ray Crystallography I**

X-ray diffraction theory, crystal symmetry and International Tables in space groups. Fall. S. Wang.

CHEM-861 Symmetry and Structural Determination by X-ray Crystallography II**

The practical aspects of x-ray diffraction analysis, including data collection, structural solution and refinement. Fall. S. Wang.
PREREQUISITE: CHEM-860**.

CHEM-863 Transition metal catalysis for organic synthesis**

A review of the basic reactions involving transition metal catalysts in transformations of organic compounds. Fundamental reactions such as oxidative addition, reductive elimination, migratory insertions and transmetallations will be covered. Different types of ligands and their bonding properties will also be covered. Reactions of importance to organic chemistry including hydrogenations, oxidations,cross coupling reactions, metathesis and other pertinent reactions will be covered. Fall. C. Crudden.

CHEM-866 Supramolecular Chemistry**

A study of the intramolecular forces responsible for molecular recognition and host/guest interactions in organic and inorganic supramolecular complexes, including rotaxanes and catenanes. Synthesis, characterization, and applications of supramolecular complexes in catalysis, biomimicry, and nanotechnology.Not offered 2018-19.

CHEM-867 Bioinorganic Chemistry**

Kinetics and mechanisms of reactions of transition metals in biological systems, including metalloproteins and metalloenzymes. Roles of metals in hydrolytic and redox enzymes, oxygen transport, development of model systems. Winter. A. Petitjean.

CHEM-869 Topics in Inorganic/Organometallic Chemistry**

Topics to be covered in this course include (a) luminescent/ electroluminescent compounds, (b) fullerene chemistry and (c) magnetic and electronic materials. Fall. K. Stamplecoskie.

CHEM-873 Optical Spectroscopic Instruments for Chemical Analysis**
An examination of advanced methods of analysis using optical spectroscopic methods, with an emphasis on instrument components, such as laser light sources, charge-coupled and other solid state detectors, fibre-optics and optical waveguide technologies. Examples will be selected from ultraviolet-visible and infrared absorbance and luminescence measurements, spectroscopic imaging, cavity and loop ringdown spectroscopy, graphite furnace atomic absorption and ICP optical emission spectroscopy. Not offered 2018-19.

CHEM-879 Chemical Separations**
This course is an introduction into the use of chromatographic and electrophoretic separation methods for chemical analysis. The goal of this course is to familiarize students with chromatographic and electrophoretic theory and develop a practical understanding of various chemical separation methods. Topics to be covered in detail are gas chromatography, liquid chromatography (reverse phase, hydrophilic interaction, normal phase and ion exchange), capillary electrophoresis (capillary zone electrophoresis, electrochromatography and micellar electrokinetic chromatography) as well as others. Not offered 2018-19.

CHEM-880 Modern Synthetic Methods**
A discussion of some modern methods used in organic synthesis with an emphasis on stereoselective reactions; illustrations of the value and scope of the methods and applications in the synthesis of complex molecules. Winter. P.A. Evans.

CHEM-882 Mechanistic Organic Chemistry**
Physical basis for organic chemistry, dealing with specific mechanistic pathways and the tools necessary for the understanding of organic reaction mechanisms. Not offered 2018-19.

CHEM-883 Bioorganic Chemistry**
Enzyme mechanisms and inhibition, catalytic antibodies, stereochemical and other biological probes. Phosphoryl group transfer reactions.Fall. D. Zechel.

CHEM-891 Topics in Chirality**
A review of topics in chirality research to be given by a changing group of experts in the field. Topics may include: Chirality transfer; Chiral catalysis; Chiral materials; Chiral photonics; and Chiral separations. Not offered 2018-19.

CHEM-892 Scientific Ethics**
A survey of the principles of scientific ethics, particularly for those who plan to

supervise and conduct research in an academic or industrial setting. Topics will include an introduction to morals and ethical theory, the concept and development of professions, and ethical problem solving. The course will include a series of case studies. Not offered 2018-19.

CHEM-893 Experimental Design**
The statistical design of experiments and the analysis of data in chemical synthesis and chemical process investigations are considered. Empirical modelling of process behaviour is studied. Applications of factorial and fractional factorial experimental designs in screening studies and methods of response surface exploration are examined. Not offered 2018-19.
EXCLUSION: CHEE-801

CHEM-894 Business skills in the chemical industry**
A review of business skills critical for success of the technical professional in the chemical industry. Topics may include an introduction to financial accounting, organizational design, managing systems, marketing and business strategy, and planning for innovation. 1.5 credit units. Fall/Winter. Coordinator: TBA.
PREREQUISITE: Registration in a graduate program

CHEM-899 Master's Thesis Research

CHEM-904* Science Leadership and Management
The Science Leadership and Management course will be delivered over twelve 3-hour sessions to Chemistry and Physics students in either of the first two years of their PhD studies (or other graduate students with permission from the course coordinator and supervisor). The first and last four-week sessions will focus on the development and application of leadership skills, and the second four-week session will focus on the development of management skills, that are useful in scientific positions in industry and academia. To be offered every fall; graded Pass/Fail. Fall. TBA.
EXCLUSION: PHYS-904*

CHEM-910* Drug Discovery
The role of the medicinal chemist in industry will be explained by way of lectures covering general drug discovery concepts.A team-based exercise mirroring a real-life drug discovery project will also take place in conjunction with the lectures. Not offered 2018-19.

CHEM-912 Green Chemistry**
An introduction to the design of chemical products, reagents, syntheses and solvents for

the reduction of the environmental impact of human activities. Design strategies and impact prediction will be emphasized.Offered biannually. Not offered 2018-19.

CHEM-913 Organic Free Radical Chemistry**
Structure, stability, persistence, and reactions of organic free radicals; common chain and non-chain radical reactions; mechanisms of initiation, propagation and termination; methods of studying the kinetics of radical reactions; common radical reactions in organic synthesis and applications in natural product synthesis; radicals in biology: lipid peroxidation, radical-trapping antioxidants, radical-based enzymes. Not offered 2018-19.

CHEM-914 Asymmetric Synthesis**
Asymmetric hydrogenations and oxidations will be covered with a mechanistic perspective (Nobel prize 2001).Carbon-carbon bond-forming reactions will then be described including nucleophilic additions and cyclopropanations. Asymmetric epoxidation and aziridination will be described. Modern asymmetric reactions including organo catalytic reactions and autocatalytic reactions will also be discussed. Not offered 2018-19.
PREREQUISITE: CHEM-863**

CHEM-915 Biosynthesis of Natural Products**
This course will examine the biosynthesis of major classes of natural products including polyketides, non-ribosomal peptides, terpenoids, indolocarbazoles, and alkaloids. Focus will be given to the mechanisms of the biosynthetic enzymes. Strategies for discovering new natural products as well as engineering existing pathways to create new compounds will also be considered. Winter. A. Ross.
PREREQUISITE: CHEM-883** or equivalent

CHEM-916 Strategies in Total Synthesis**
A discussion of syntheses of complex organic molecules selected from pharmaceutical, natural product, and materials science areas using retrosynthetic analysis concepts. Illustrated syntheses will incorporate fundamentally important and currently significant synthetic methodologies as practiced in small scale academic and process scale industrial laboratories. Winter. P.A. Evans.
PREREQUISITE: CHEM-880**

CHEM-917 Microfluidics**
This course will cover subject areas ranging from the fundamentals of microfluidics and nanofluidics suitable for beginners to the examination of applications of microfluidics for end users. A range of devices will be shown and described with various applications

ranging from organic synthesis to biochemical analysis. Class participants will learn fabrication and characterization strategies for microfluidic components as well as fluid manipulation and detection methodologies applied to minute volume fluid samples. Not offered 2018-19.

CHEM-918 Scanning Probe Methods**
The theory and practice of scanning probe techniques, including scanning tunneling microscopy (STM) and atomic force microscopy (AFM) and related techniques. Applications to modern research in surface and interfacial chemistry. Not offered 2018-19.

CHEM-919 Solid State Chemistry**
Introductory solid state theory from the chemist's perspective: free electron metals, Bloch functions and LCAO description of solids.Experimental determination of band structure using photoelectron spectroscopy. Application to material properties such as conductivity, superconductivity, and semiconductors.Not offered 2018-19.

CHEM-920 Photochemistry and Spectroscopy**
Topics include photon absorption, potential energy surfaces and conservation laws, experimental observables and techniques. Laser techniques and molecular beam techniques will be discussed. Laboratory experiments will be related to atmospheric and environmental chemistry. Not offered 2018-19.
EXCLUSION: CHEM-841*

CHEM-931* Angular Momentum Theory
Topics include the density matrix formulation, coupling of more than two angular momenta, spherical tensor representations and the Wigner-Eckart theorem. Emphasis will be placed on applications in molecular physics. Not offered 2018-19.

CHEM-933 Organic Electronics**
A survey of the basis of molecular electronics, from the molecule properties, to the device behaviour. A critical discussion of organic semiconductors is given in view of its differences with inorganic semiconductors. Future developments such as single molecule devices, molecular sensing and bio-compatible devices are emphasized. Not offered 2018-19.
EXCLUSION: CHEM-833*

CHEM-936 Advanced Quantum Mechanics**
Topics selected from relativistic electron theory, scattering theory, quantum field theory, wavepacket dynamics, approximation methods, semiclassical limits, and

tunnelling. Not offered 2018-19.
EXCLUSIONS: CHEM-930*; CHEM-933**.

CHEM-937 Advanced Statistical Mechanics**
The application of statistical mechanics to fluids and interfaces. Topics include classical intermolecular and intramolecular potentials, molecular dynamics simulations, Monte Carlo simulations, and analytical theories. Not offered 2018-19.

CHEM-938 Density Functional Theory**
An introduction to the techniques and applications of density functional theory. Not offered 2018-19.

CHEM-939 Quantum Mechanics in the Continuum**
Most undergraduate quantum courses treat only bound states but much of chemistry occurs in the continuum. This course offers an introduction to the ideas used to understand how molecules fall apart and combine allowing us to apply quantum mechanics to study photodissociation and chemical reactions. Not offered 2018-19.

CHEM-942 Density Matrix Theory and Spectroscopy**
The theoretical background of density matrix theory and its applications in spectroscopy, particularly multi-dimensional NMR. Not offered 2018-19.

CHEM-945 Topics in Interfacial Electrochemistry**
Topics to be covered in this module may include: (a) definition of the electrochemical solid-liquid electrified interface, (b) selected electrochemical techniques (cyclic voltammetry, electrochemical quartz-crystal nanobalance, STM under electrochemical conditions), (c) adsorption at electrode surfaces, (d) under-potential deposition of hydrogen, (e) under-potential deposition of metals, (f) interfacial thermodynamics, and (g) electro-oxidation of noble-metal electrodes. Fall. G. Jerkiewicz.
EXCLUSION: CHEM-845*

CHEM-954 Polymer Supramolecular Organization**
Liquid crystalline polymers, spontaneous order and induced order in polymers specifically designed to mimic supramolecular association and recognition. Dendrimers, block structures, and associated surfaces will be included. Not offered 2018-19.
PREREQUISITE: CHEM-984**.

CHEM-960 Luminescent Materials Chemistry**
This course introduces the current topics in luminescent materials chemistry including

photophysical and photochemical properties of transition metal and main group compounds, and characterization methods.The design and synthetic aspects of luminescent materials and their applications in sensing and optoelectronic devices, and photocatalysis will also be discussed. Winter. J-M. Nunzi.

CHEM-972 Environmental Chemical Sensors**
An overview of chemical sensor and biosensor technology as applied to environmental monitoring. Electrochemical and optical sensors will be discussed, including the fundamental principles behind sensor operation. Performance parameters, such as sensitivity, selectivity, reusability, stability and response will be covered. Detection applications include solvents in air and groundwater, organic contaminants and heavy metals in water and wastewater, and biological contaminants in drinking water. Winter. I. Kozin.
EXCLUSION: CHEM-872*

CHEM-975 Inductively-Coupled Plasma Mass Spectrometry (ICP-MS)**
A detailed description of the technique, means of circumventing its limitations and expanding its capabilities. Examples of applications, including environmental analysis.Winter. D. Beauchemin.

CHEM-983 Solving Reaction Mechanisms**
The practical application of basic principles of mechanistic organic chemistry in solving reaction mechanism problems drawn from the chemical literature. Not offered 2018-19.
PREREQUISITE: CHEM-882**.

CHEM-984 Liquid Crystals**
Fundamental aspects of liquid crystal science at the interface of chemistry and condensed matter physics. Topics will include mesophase structure and characterization, chiral liquid crystals, polymeric liquid crystals, and liquid crystal technology. Not offered 2018-19.

CHEM-987 Biomimetic Chemistry**
Topics covered include enzyme models, synzymes, effective molarity, supramolecular chemistry and binding, nucleic acid and peptide mimics, and enzyme inhibitors. Not offered 2018-19.
PREREQUISITE: CHEM-886* . EXCLUSION: CHEM-887*.

CHEM-999 Ph.D. Thesis Research

CIVIL ENGINEERING

NOTE: All courses offered in the Civil Engineering Department are of one term in length. Examinations are held at the end of each term. All listed courses may not be offered each year.

APSC- 896* Engineering Leadership and Innovation
This course is designed to develop a range of skills essential for engineering professional practice in both the public and private sectors. The course will focus on; Engineering Leadership and Innovation including its application in project management. The course content will be presented through lectures, case studies, panel discussions and an interactive serious game.

CIVL-801 Health and Safety in Civil Engineering Research
An introduction to safety procedures in civil engineering research. This non-credit course consists of a general introduction lecture and modules on: (i) specimen & experiment fabrication, (ii) chemical & biohazard safety and (iii) field research. ALL students must successfully complete CIVL-801 at the first opportunity. Fall, Winter and Summer.

CIVL-822 Structural design of buried pipes
Overview of soil-pipe interaction, design of rigid pipes for bending moments, design of flexible pipes for thrust and deformation, and design of profiled thermoplastic pipes considering local buckling and local bending. (1.5 credit units)

CIVL-823 Pipe repair using liners
Overview of pipe deterioration and lining methods available for repair, liner design of gravity flow pipes to withstand external fluid and soil loads, and liner design for pressure pipes. Introduces the design code for cured in place liners and the instructor's design procedures. (1.5 credit units)

CIVL-824 Pipe replacement using bursting
Overview of pipe replacement by pipe bursting, the causes of ground movement and their effects on other infrastructure, and the expected and allowable pulling forces needed to pull the new pipe into place. It introduces the instructor's simplified design tools and their limitations. (1.5 credit units)

CIVL-825 Horizontal directional drilling
Overview of directional drilling, use of drilling mud and causes for and prevention of mud loss, soil-pipe interaction and the expected and allowable pulling forces. It

introduces the current ASTM design code and the instructor's simplified design tools and their limitations. (1.5 credit units)

CIVL-828* Serviceability of Concrete Structures
This course is intended to provide structural engineers with an in-depth understanding of the performance of reinforced, prestressed and composite concrete-steel structures under service conditions, including both the short and long term performances. The course deals with the effects of creep and shrinkage of concrete, relaxation of prestressing steel, temperature, and settlement of supports on deflections, cracking and internal forces. The displacement and force methods of analysis are used to account for these affects in calculating the deformations and time dependent forces and moments. The course also covers the effects of construction and loading in different stages. The course deals only with service conditions and doesn't deal with concrete structures at the ultimate stage or at failure. Lecture based, 3 hrs/week.

CIVL-831* Assessment and Monitoring of Infrastructure
This course provides an introduction to commonly used numerical assessment techniques (e.g. plastic collapse and FEA) and discusses the pros and cons of these techniques. Monitoring technologies (e.g. fibre optic sensors, conventional transducers etc.) are then investigated and discussed with a focus on supporting experimental work and assessment.

CIVL-833* Advanced Materials for Civil Engineering
Engineering materials, material properties and characterization, modern steel manufacturing; ferrous alloys, structural carbon steels, special steels; structural aluminum, welding effects on metals, Portland cement concretes, morphology and properties, advanced engineering concretes, durability, pozzolans, admixtures, polymers and fibre reinforced polymers, mechanics and durability, selected additional topics, recent advances and applications. Laboratory experiments will be used to strengthen lecture topics. A seminar project is usually undertaken in this course. Three term-hours, Fall. D. Cree

CIVL-834* Advanced Reinforced Concrete
This course aims at developing an in-depth understanding of the fundamental structural behavior of reinforced concrete members subjected to a variety of loading conditions. The topics include introduction of material properties and design approaches, flexural behavior using actual material constitutive relationships, bi-axial bending with or without axial loads, slender columns, serviceability, ductility, shear analysis using various advanced approaches such as truss model, strut and tie model

and compression field theories, torsion, two-way slabs including yield line theory, and FRP reinforcement for concrete structures (Three lecture hours a week).

CIVL-835* Advanced Infrastructure Materials
Design of masonry, fibre reinforced polymer (FRP) and wood structures is covered. Topics include design of masonry beams and walls; seismic design of masonry structures; manufacturing techniques for FRPs; stiffness and strength design for FRPs; design of wood beams and columns; wood connections. A project is normally undertaken in the course. Three term-hours, winter (offered in alternating years).

CIVL-836* Advanced Steel Design
Applications of Linear Elastic Fracture Mechanics; Fatigue of Steel Structures; Stability and Design of Columns; Stability and Design of Beams; Stability and Design of Beam-Columns; Stability, Analysis, and Design of Frames. Three term-hours, Summer.

CIVL-837* Prestressed Concrete
Behaviour, analysis and design of pretensioned and post-tensioned concrete systems including simply supported and continuous beams. Considerations of prestress losses, cracking, deflection and anchorage zones. A design project is undertaken in the course. Three term-hours, winter. A.Z. Fam

CIVL-838* Design of Concrete Structures with Fibre Reinforced Polymers
This course considers the design of new concrete structures reinforced or prestressed with fibre reinforced polymer (FRP) reinforcement, and the design of FRP repairs for existing concrete structures. Topics will include properties of FRP reinforcement, flexural design with internal FRP, shear design of concrete reinforced with internal FRP, prestressing with FRP, flexural and shear strengthening of concrete beams and slabs with external FRP, and confinement of concrete columns with FRP. Three term hours, Winter.

CIVL-839* Approximate Structural Analysis
This course will present a number of advanced approximate methods for analyzing structures. Topics covered include: analysis of statically indeterminate trusses and frames; model analysis; energy principles; numerical integration for solving structural problems including Newmark's method and beams on elastic foundations; structural vibrations including Rayleigh's principle, Stodola's iteration technique, and distributed mass systems using Newmark's method; structural stability including the energy criterion for stability, lower-bound methods, the method of Vianello, columns with lateral loads, Perry's approximation, the conjugate beam method, stability of unbraced frames and multi-storey building frames; plastic collapse of plane frames, including the

plastic moment of a cross-section, and limit theorems of plastic collapse; limit analysis of plates and slabs including the upper and lower bound methods, failure mechanisms, combined loading, and the strip method for slab design. Three term hours, spring. C. MacDougall.

CIVL-840* Advanced Soil Mechanicas
Current theories on the yielding and failure of soils are presented and discussed in lectures. Topics include stress-dilatancy, critical state soil mechanics, and the interpretation of triaxial test data. Additional advanced topics are investigated through a seminar project including fracture, anisotropy, time dependent behavior, and cyclic loading. Three term-hours, Fall (offered in alternating years).W.A. Take.

CIVL-842* Foundation Engineering
Topics and seminars to be chosen from soil classification, compaction, swelling, frost, seepage, stress distribution, settlement, site investigation, shallow and deep foundations, site and soil improvements, excavations, retaining and support structures, and overall stability problems. Three term-hours, winter. Held at Queen's or RMC depending on enrolment. NOTE: This is a joint course with RMC Civil Engineering Department.

CIVL-843* Landslides
Mechanisms and methods of analysis of landslide triggering are presented and discussed in lectures along with various remedial and preventative measures. Topics include triggering processes, and remediation through earthworks, erosion control measures, dewatering, anchors, and retaining structures. A seminar project is usually undertaken in this course. Three term hours, Fall (offered in alternating years). W.A. Take.

CIVL-844 Geotechnical analysis 1: Elasticity
Overview of equilibrium and classical elasticity; introduction to elastic finite element analysis; derivation of stiffness equations using the principle of virtual work; static and kinematic boundary conditions; error checking. (1.5 credit units)

CIVL-845 Geotechnical analysis 2 : Inelastic analysis
Overview of equilibrium and classical plasticity; failure criteria; flow rule and elastic plastic constitutive response; inelastic finite element analysis; modelling and solution of geotechnical engineering problems. (1.5 credit units)

CIVL-846* Human Factors and GeoEngineering Projects
Human factors affecting the success of geoengineering projects are examined

predominantly through a series of Case Studies. A major focus will be on the human related causes of engineering failures (often ending in legal cases). Technical issues will be discussed as needed to understand the issues but a focus will be made on how many poor engineering and/or management decisions accumulated to result in the final problem in most cases.

CIVL-847* Geosynthetics in Geotechnical Engineering
Topics include: types of geosynthetics and manufacturing processes; properties and test methods; methods of analysis and design for geosynthetics used for separation, filtration, soil reinforcement, erosion control and liquid/hazardous waste containment. Held at Queen's or RMC depending on enrolment. Three term-hours, fall, lectures. NOTE: This is a joint course with RMC Civil Engineering Department.

CIVL-848* Landfill Design
Geoenvironmental aspects of waste management are examined with particular emphasis on the design of systems to provide long term protection against groundwater contamination. A major focus is the integration of engineering design and hydrogeologic considerations and contaminant transport through barrier systems and natural soils. Three term-hours, winter. R. Brachman.

CIVL-850* Advanced Fluid Mechanics
Fundamental equations of real fluid flows are developed and discussed using vector and tensor notations. Some exact and approximate solutions of these equations are introduced. The stability of laminar flows and the transition to turbulence are examined; the Reynolds equations are derived and some applications of these equations are investigated. The boundary layer concept is introduced. Recent developments in the theory of turbulence are outlined and discussed. Three term-hours, fall. A.M. da Silva.

CIVL-852* Environmental Fluid Dynamics
Topics to include: conservation equations for turbulent flows; wall-bounded shear flows; spectral dynamics; measurement and modelling of mixing and dissipation in stratified flows; stability of stratified flows; linear, nonlinear and dispersive waves (e.g. seiches, Kelvin waves, Poincare waves and solitary waves); internal wave breaking; convection. Theory will be discussed with reference to field observation, computational and laboratory modelling of lake and ocean flows.Three term-hours.L. Boegman.

CIVL-853* Water Waves
Fundamentals of surface gravity wave physics including generation, propagation, dispersion, refraction, diffraction, reflection and dissipation are covered. Topics include wave theories, spectral analysis, wave momentum flux, wave-driven currents, wave-

sediment interactions, wave forces and design of structures. Emphasis will be on theoretical analysis and practical engineering design, as well as on physical and numerical modelling (Three lecture hours per week). R.P. Mulligan.

CIVL-855* Hydrodynamics of Coasts and Estuaries
An advanced class in physical processes acting in coastal environments ranging across the continental shelf to estuaries, river deltas, beaches, barrier islands and tidal inlets. Topics include surface waves, long waves, storm surges, tides, mixing, coastal circulation, wind forcing, upwelling, salinity, morphology, sediment transport and contaminant dispersion. Observation and prediction methods will be covered and examples from major events such as hurricanes and tsunamis will be discussed. Emphasis will be on theoretical analysis, numerical model applications and engineering designs (Three lecture hours per week). R.P. Mulligan

CIVL-856* River Morphodynamics
Aspects of the bed and bank deformation of alluvial rivers will be addressed. Topics covered include hydraulics of flow in river channels; mechanics and quantification of sediment transport; sediment transport continuity equation; bed forms and flow resistance; regime concept and determination of equilibrium (stable) alluvial channels; adjustments of equilibrium and river channel changes; geometry and mechanics of meandering and braiding streams; local scour and related problems. Computer-aided study of alluvial river processes will be discussed. Three term-hours, fall.

CIVL-857* River Engineering
A course in the basics of river engineering including the study of alluvial process, the prediction and consequences of sediment transport, the design of measures to control erosion and accretion, and the design of dams, spillways and diversions. Hydraulic modelling of fluvial processes and engineering structures is addressed. Water quality including transport and mixing of conservative and non-conservative substances is discussed. Techniques for water quality monitoring, and control and bioengineering in a riverine environment are also addressed. Three term-hours, winter. A.M. da Silva.

CIVL-858* Computational Hydraulics
Fundamental numerical algorithms and computational schemes will be introduced and applied to the solution of flows frequently encountered in the practice of hydraulic engineering. Topics covered include solution of non-linear equations; tridiagonal and block-tridiagonal systems of equations; solution of partial differential equations (finite difference schemes, control volume approach); grid generation. Applications to the determination of flow velocity and pressure fields of selected 1-D and 2-D laminar and turbulent open-channel flows will be considered. Three term-hours, winter.

CIVL 859* Fundamentals of Coastal Engineering
This course covers wave theory, wave measurement, wave statistics, wave transformation, wave modelling, tides, water levels and storm surges. It introduces design of breakwaters and other coastal structures, and uses hydraulic and numerical coastal models. Utilization of bioengineering and beach nourishment in the coastal zone is addressed. Design and construction issues associated with harbours and marinas are discussed. Shoreline stability in relation to sediment transport and external environmental parameters are introduced. Environmental considerations, coastal zone management, coastal sediment transport and design in the coastal zone are also considered. (Three lecture hours per week). R.P. Mulligan

CIVL-880* Subsurface Contamination
This course deals with subsurface contamination by hazardous industrial liquids such as PCB oils, gasoline, jet fuel, chlorinated solvents and coal tars. The fundamentals of multiphase/multicomponent flow and transport will be outlined followed by specific treatments of both dense and light non-aqueous phase liquids. The course will examine the subsurface distribution of these liquids, sampling and detection, clean-up technologies, regulatory aspects, and selected case histories. (CIVL-480 plus additional material.) Three term-hours, fall. B. Kueper

CIVL-881* Flow and Transport in Fractured Rock
The course will cover a review of structural geology relevant to hydrogeology, an introduction to the cubic law, transport in discrete fractures, flow and transport in fracture networks, methods for measurement of parameters (i.e. hydraulic testing), modelling of flow through fractures and fracture networks, groundwater flow in low permeability environments and a detailed case study.

CIVL-882* Analytical and Numerical Methods in Groundwater Modeling
This course will provide an advanced treatment of groundwater modeling techniques. The student will be introduced to analytical methods based on advanced calculus and to traditional and novel numerical methods. Topics in analytical methods will include the Laplace transform technique for PDEs and other integral transform methods, with applications to radial groundwater flow and linear solute transport problems. Topics in numerical methods will include a brief introduction to Finite Difference and Finite Element theory and the practical application of numerical methods to groundwater flow and transport problems. Three term hours, Fall.

CIVL-883* Gases in Groundwater
Advanced topics in multiphase flow relevant to gases in subsurface porous media, focused on contamination and remediation, with emphasis on fundamental theory and

conceptual models. Lecture topics include interfacial properties, pore-scale conceptual models, phase partitioning, vapour transport, bubble flow, and mass transfer to trapped gases. Three term-hours, Winter (alternating years). K.G. Mumford

CIVL-884* Field Methods in the Hydrogeology of Fractured Rock
This course will provide students with hands-on experience in conducting the field techniques typically used for the characterization of fractured rock aquifers. The course will include a combination of lecture material and field testing. The course will be delivered at the Kennedy Field Station and will involve approximately six days of on-site testing.

CIVL-885* Chemistry of Natural Waters
This course covers several topics in the area of natural water chemistry including: dilute aqueous solution chemistry of surface and groundwater systems; chemical kinetics and equilibrium; acid-base chemistry; coordination chemistry; precipitation, dissolution and complex formation; carbonate, phosphate and chlorine chemistry; oxidation-reduction reactions and corrosion; and solution of multi-equilibria problems. Three term hours, winter.

CIVL-886* Biological Treatment Processes
This course will develop the principles and operation of biological treatment processes with particular emphasis on the microbiological aspects of these operations. The application and design of different treatment methodologies, incorporating aerobic and anaerobic techniques, will be detailed for various wastes. The management, processing and disposal of treatment residuals will be presented. Selected advanced and innovative small-scale treatment options will be described. Three-term-hours, fall. B.C. Anderson.

CIVL-887* Biomass Conversion
This course introduces the pertinent underlying concepts for the conversion of biomass to bioenergy, biofuels and higher value bio-based products considering the interface of biotechnology, microbiology, chemistry and material science and how processes can be successfully engineered to support/promote environmentally sound practices.

CIVL-888* Theory of Groundwater Flow and Transport
This advanced course examines the theoretical foundations of ground-water flow and contaminant transport. Topics covered include potential concepts, groundwater flow, aquifer-aquitard systems, unsaturated flow, reactive and non-reactive solute transport, stochastic flow and transport, fractured media, and density-dependent transport. Three term-hours, winter. B.H. Kueper

CIVL-890* Water Network Analysis/Design
Topics to include: review of basic fluid mechanics of closed-conduit flow; hydraulic characteristics of pumps, valves, tanks and reservoirs; network hydraulics (includes pipes in series and parallel, systems of equations for steady state network flow and solution algorithms, fire analysis, unsteady flow conditions, extended period simulation, hydraulic transients); water quality simulation (includes transport mechanisms, reaction kinetics, mixing in storage facilities, transport and mixing in pipe network, steady state and dynamic water quality modelling); water demand and design standards; master planning of water networks. The course will also cover advanced topics in: water network optimization, sensor placement, contaminant detection, sustainable water systems, dual water systems and water re-use. Three term hours, winter.

CIVL-891* Water Quality and Discolouration in Drinking Water Distribution Systems
This course presents approaches to analyze and model drinking water quality and discolouration in distribution systems. The course covers approaches in aquatic chemistry for the testing of drinking water. Transport processes and advanced topics in discolouration of drinking water are examined with emphasis on the measurement and modelling of the growth and mobilization of cohesive layers in pipes.

CIVL-892* Structural Dynamics
Review of one degree of freedom systems, multi-degree of freedom systems, and continuous systems, including analyses in both time and frequency domains; finite element formulation for dynamics of structures; structural response to wind, earthquake and moving vehicles; introduction to random vibration; use of computer programs. A seminar project is usually undertaken in this course. Three term-hours, winter. M.F. Green.

CIVL-895* Special Topics in Civil Engineering
Current topics of interest to civil engineering students, as well as other engineering and non-engineering students, will be presented. Staff

CIVL-896* Sustainable Engineering in Remote Areas
This seminar/workshop series and associated online modules are comprised of three main streams including Aboriginal issues (culture, legal and policy issues), social issues and sustainability standards, and business skills training. This course is a mandatory component of the NSERC CREATE training program on Sustainable Engineering in Remote Areas.

CIVL-897* Water Policy and Governance
This course investigates waters governance from the science, engineering and policy aspects found around the world. This course is designed to engage graduate students in discussions on a wide range of governance issues relating to water in a way that is relevant to their current field of study. Specific policies and governance that are relevant world-wide will be covered and include climate change, water quality, water supply, water and the environment and water and human health. This course, although placed in the Department of Civil Engineering, is designed for inclusion in the course offerings from departments across Queen's University.

CIVL-898* Master's Project
The department requires three copies of a Master's Report. These will be retained by the department. (3.0 credit units)

CIVL-899 Master's Thesis
See Graduate School regulations concerning thesis requirements.

CIVL-999 Ph.D. Thesis
See Graduate School regulations concerning thesis requirements.

CLASSICS

Normally, a minimum of six half courses will be offered each year from the list below. Course offerings for the upcoming academic year will be posted on the Classics website in July.

Most Classics graduate courses are half-year courses (3.0 units). However, the archaeology practicum courses (CLAS-808, CLAS-809, CLAS-810) which are offered in the summer term are weighted at 6.0 units.

Only CLAS-800 and CLAS-802* are offered every year.

GREK-820* Greek Poetry I: Epic
Detailed study of selections from the works of Homer and Hesiod.

GREK-821* Greek Poetry II: Lyric
Selections of Lyric, elegiac and iambic poetry from Archilochus to Pindar.

GREK-822* Greek Drama
Detailed study of one play of Aischylos, Sophocles, Euripides, Aristophanes or Menander.

GREK-823* Greek Historians
An intensive study of Greek historical writings, with special emphasis on Herodotus, Thucydides and Xenophon.

GREK-824* Greek Rhetoric
One speech from Lysias, one from Demosthenes' corpus.

GREK-830*,831*,832*,833* Reading Courses
Reading of any Greek author or authors approved by the Department. Informal instruction. Examination on ability to translate only.

LATN-810* Latin Drama
A study of the work of Plautus, or Terence, or Seneca, and its position within the classical comedic or tragic tradition.

LATN-811* Latin Rhetoric
An intensive study of the traditions of ancient rhetoric with readings in Cicero's rhetorical works and orations.

LATN-812* Latin Poetry I: Epic
A study of Vergil's Aeneid, or Ovid's Metamorphoses, or Lucan's Civil War, or Statius' Thebaid, and its position within the Latin epic tradition.

LATN-813* Latin Poetry II: Lyric, Elegy, Didactic, and Satire
A study of a major non-epic work or genre, such as Vergil's Georgics; Horace's Odes, Satires, or Epistles; or the elegiac poetry of Propertius, Tibullus, or Ovid.

LATN-814* Roman Historians
An intensive study of Roman historical writings, with readings in Sallust, Livy and Tacitus.

LATN-815* Latin Epigraphy
A lecture course examining the categories of Latin inscriptions, the archaisms, formulae and abbreviations. Sample inscriptions will be chosen from the earliest to later Imperial times.

LATN-830*,831*,832*,833* Reading Courses
Reading of any Latin author or authors approved by the Department. Informal instruction. Examination on ability to translate only.

CLAS-800* Research Forum I
Discussion of the principal research problems and methodologies in the field of Classical studies. Presentation of faculty research and visiting speakers. Weekly meetings.

CLAS-802* Research Forum II
Discussion of the principal research problems and methodologies in the field of Classical studies. Bi-weekly meetings and final presentation of graduate students in conference format.

CLAS-804* Topography of Athens
The growth of Athens from the final Neolithic period to Late Antiquity based on archaeological, literary, epigraphical evidence. (May be offered jointly with CLST-404*. There are additional requirements for students at the graduate level but these are determined and discussed at the onset of the course.)

CLAS-805* Topography of Rome
The growth of Rome from the Neolithic period to Late Antiquity based on archaeological, literary, epigraphical evidence. (May be offered jointly with CLST-405*.

There are additional requirements for students at the graduate level but these are determined at the onset of the course.)

CLAS-808 Archaeology Fieldwork Practicum I
An intensive six-week study of archaeological methods and interpretation while participating in a fieldwork project run by a member of the Classics Department. Students will actively contribute to the project with scientific reports and stratigraphic records. COST: students are expected to pay their own travel costs and a course fee to be determined. (6.0 credit units)

CLAS-809 Archaeology Fieldwork Practicum II
An intensive study of archaeological methods and interpretation at a fieldwork project in Italy under the supervision of a member of the Classics Department. Students will actively contribute to the project with scientific reports and stratigraphic records. COST: students are expected to pay their own travel costs and a course fee to be determined. Spring/Summer term or Spring term or Summer term. (6.0 credit units)

CLAS-810 Archaeological Fieldwork Practicum III
This course is an intensive study of archaeological and cultural heritage recording methods at a fieldwork site in the Balkans under the supervision of a member of the Department of Classics. COSTS: Students are expected to pay their own travel and accommodation costs. (6.0 credit units)

CLAS-814* Roman Archaeology
This course is an intensive study of topics of Roman archaeology. Topics will vary according to the instructor,including, but not limited to, settlement pattern and land use, urban planning, architecture, visual art public and private, both in Italy and the provinces from the Iron Age to Late Antiquity.

CLAS-815* Archaeology of the Roman Army
The goal of this course is to familiarize graduate students with the wide range of materials available for studying the Roman army. The Roman army constitutes one of the most documented groups from the ancient world. Forts, inscriptions, and military paraphernalia have been found in all parts of the former Roman Empire. A rich collection of ancient literary texts relating to Roman military practices has also survived. By studying this material, students will learn not just about the Roman army, but about the range of materials available for studying the ancient world in general. Fall or Winter Term.

CLAS-820* Topics in Classical Studies I
Intensive study of a special topic in the Greek and Roman World from the Dark Ages to Late Antiquity.

CLAS-821* Topics in Classical Studies II
Intensive study of a special topic in the Greek and Roman World from the Dark Ages to Late Antiquity.

CLAS-822* Greek Archaeology I
This course focuses on architecture and the development of town planning in ancient Greece. Various building types, both sacred and secular, will be studied.

CLAS-823* Greek Archaeology II
This course focuses on art in ancient Greece, emphasizing the post-Bronze Age. Classification and development of various styles in art from the so-called Dark Age to the Hellenistic period.

CLAS 824* Archaeology of the Western Greeks
The course deals with the Greek colonies of the Western Mediterranean, and especially Southern Italy, from their foundation to the Roman conquest. The development of a peculiar "Western Greek" experience and its contribution to the Greek culture will be investigated by examining especially significant case studies. The distinctive and multifaceted milieu of the Greek "Western frontier" and the long term relationships with the local population of Italy, including Etruscans and Romans, will be one of the main topics. Fall/Winter Term. Prerequisite: Permission of Course Instructor required in advance.

CLAS-825* Etruscan and Italic Archaeology
This course is an intensive study of the archaeology of the Etruscans and the other cultures of Italy until the end of the 1st century BC, with the exclusion of the Greek colonies. Topics will vary according to the instructor.

CLAS-832* Greek History I: Archaic/Classical
Specialized study of a topic in either period of Greek History.

CLAS-833* Greek History II: Hellenistic
Specialized study of a topic in the Hellenistic era.

CLAS-842* Roman History I: Early Rome and Republic
Specialized study of a topic in the history of Rome from the urban formation to the end of the Republic.

CLAS-843* Roman History II: Empire
Specialized study of a topic in the history of the Roman Empire.

CLAS-850* Comparative Literature I
An introduction to comparative literary studies as currently practiced with particular emphasis on the relevance to such studies of contemporary theories of literature and criticism. (Given jointly with ENGL-950*, FRAN-950*.)

CLAS-851* Comparative Literature II
Specialized study in comparative context of particular authors, themes, movements, periods, genres, literary forms or some combination of these elements. (Given jointly with ENGL-951*, FRAN-951*, GRMN-890*.)

CLAS-860* Ancient Science
The course explores Greek and Roman approaches to understanding the natural world. The course will introduce students to issues in the ancient sciences by examining in detail a group of related ancient texts, both in terms of scientific content, as well as intellectual and cultural contexts. Themes will be developed with an eye to contemporary issues in political and social history, and to the history and philosophy of science and technology. PREREQUISITE: Permission of Instructor required in advance.

CLAS-898 Master's Essay Research

CLAS-899 Master's Thesis Research

COMPUTATIONAL SCIENCE AND ENGINEERING

QCSE-810* Fundamentals of Computational Science
This course is offered in the Fall semester and is open to graduate students enrolled in the Computational Science and Engineering specialization. The purpose of this course is to present the tools necessary to pursue computational science and engineering within the student's "home" discipline.
This course is offered jointly with CISC 810*. Graduate students not enrolled in the CSE specialization and advanced undergraduate students interested in taking this course must register in CISC 810*. The Queen's CSE management committee may cap enrollment, in which case students in the CSE specialization have priority.
PREREQUISITE Permission of the Queen's CSE Director required for students enrolled in the CSE specialization. Permission of the instructor is required for all others.
EXCLUSION CISC 810*

QCSE-811* High Performance Computing And Its Applications
This course is offered in the Winter semester and is open to graduate students enrolled in the Computational Science and Engineering specialization. This course covers the principles and practices of current high performance computing architecture and software, such as parallel, massively parallel, and grid computing. Advanced tools for analyzing and optimizing the performance of algorithms important to computational science and engineering will be introduced.
This course is offered jointly with CISC 811*. Graduate students not enrolled in the CSE specialization and advanced undergraduate students interested in taking this course must register in CISC 811*. The Queen's CSE management committee may cap enrollment, in which case students in the CSE specialization have priority.
PREREQUISITE Permission of the Queen's CSE Director required for students enrolled in the CSE specialization. Permission of the instructor is required for all others.
EXCLUSION CISC 811* and CISC 878* taken in 2004-2005.

QCSE-888 Computational Science Colloquium
This non-credit course is offered in Fall, Winter, and Spring semester. Students in the Queen's CSE specialization must register and participate. Non-Queen's CSE students cannot register, but participation is open to all graduate students, advanced undergraduate students, and faculty interested in computational science.
This colloquium will include occasional invited speakers and selected seminars in participating departments. Queen's CSE students are required to lead one or more sessions, including a presentation related to the research component of the CSE specialization. PREREQUISITE Permission of Queen's CSE Director.

COMPUTING

The actual courses offered each term will be determined by student demand and the availability of faculty. All courses are half courses. In addition to the courses listed below, descriptions of other courses offered by the school are given in the undergraduate calendars.
Graduate students in the school may include in their program relevant courses from other departments such as Electrical Engineering, Psychology, Mathematics, or the School of Business.

CSAI-801* Fundamentals of Artificial Intelligence and Machine Learning
An introductory course on Artificial Intelligence and Machine Learning for graduate students without a background in Computing. Includes fundamental concepts in AI, state space search, knowledge representation, intelligent agents, problem solving, planning, decision making, robotics, natural language processing, computer vision, embodied and situational cognition, machine intelligence, statistical modeling, clustering, prediction, and artificial neural networks. PREREQUISITES: a 100-level math course; some programming experience; permission of the School.
EXCLUSIONS: CISC 352, CISC 452, CISC 453, CISC 856, CISC 867

CISC-801* Programming Skills and Tools for Processing of Biomedical Data
The objective of this course is to provide students hands-on training in computer programming languages and tools to familiarize them with the principles and practice of cutting edge technologies for bioinformatics used in biomedical and molecular sciences research. This course will span over four weeks and will consist of a combination of lectures and interactive computer labs. Specifically, students will acquire working knowledge of basic functions in Rand MATLAB for managing and pre-processing biomedical data, and use examples of real biomedical data to apply methods for identifying data outliers and gain skills for cloud computing.
PREREQUISITE: Admission in the Graduate Diploma (GDip [BI]) or Masters in Biomedical Informatics (MBI) or permission of the Program Coordinator.
EXCLUSIONS: none

CISC-802* Biomedical Data Analysis
The objective of this course is to provide students with hands-on training in the analysis of biomedical datasets to familiarize them with the principles and practice of cutting edge technologies for bioinformatics used in biomedical and molecular sciences research. This course will span over four weeks and will consist of a combination of lectures and interactive computer labs. Specifically, students use examples of real

biomedical data to apply methods for recognizing patterns, classify and extract features using supervised and unsupervised learning approaches, and grasp basic concepts in biostatistics and employ statistical algorithms for data analysis. PREREQUISITES: CISC-801* and admission in the Diploma in Biomedical Informatics or Masters in Biomedical Informatics (MBI) or permission of the Program Coordinator.
EXCLUSIONS: None

CISC-803* Biomedical Data Mining and Applications
The objective of this course is to provide students with hands-on training in data mining to familiarize them with the principles and practice of cutting edge technologies for bioinformatics used in biomedical and molecular sciences research. This course will span over four weeks and will consist of a combination of lectures and interactive computer labs. Specifically, students will acquire knowledge and skills for mining various biomedical dataset, survey the breadth/depth of biomedical datasets and how they are used to advance biomedical research, design an experiment that will require them to generate a hypothesis and test that hypothesis using real biomedical data.
PREREQUISITES: CISC- 801*, CISC-802* and admission in the Diploma in Biomedical Informatics or Masters in Biomedical Informatics (MBI) or permission of the Program Coordinator.
EXCLUSIONS: None

CISC-810* Fundamentals of Computational Science
This course is offered in the Fall semester and is open to graduate students and advanced undergraduate students interested in Computational Science and Engineering. The purpose of this course is to present the tools necessary to pursue computational science and engineering within the student's "home" discipline.
This course is offered jointly with QCSE-810*. Graduate students enrolled in the CSE specialization must register in QCSE-810*. The Queen's CSE management committee may cap enrollment, in which case students in the CSE specialization have priority.
PREREQUISITE: Permission of the instructor.
EXCLUSION: QCSE-810*

CISC-811* High Performance Computing And Its Applications
This course is offered in the Winter semester and is open to graduate students and advanced undergraduate students interested in Computational Science and Engineering. This course covers the principles and practices of current high performance computing architecture and software, such as parallel, massively parallel, and grid computing. Advanced tools for analyzing and optimizing the performance of algorithms important to computational science and engineering will be introduced.
This course is offered jointly with QCSE-811*. Graduate students enrolled in the CSE

specialization must register in QCSE-811*. The Queen's CSE management committee may cap enrollment, in which case students in the CSE specialization have priority.
PREREQUISITE Permission of the instructor.
EXCLUSIONS: QCSE-811* and CISC-878* taken in 2004-2005

CISC-825* Paradigms of Wireless and Mobile Networking
This course introduces the different paradigms of wireless and mobile networking. It will also familiarize students with the state-of-the-art technologies, as well as with recent efforts in research and standardization. Students taking this course will develop a strong grasp of the different architectures involved in current and future wireless networks, have a functional understanding of the different paradigms, design and analyze the behavior of wireless and mobile networks protocols using one or more network simulation tools. PREREQUISITE: CISC-435 or equivalent.

CISC-832* Data Base Management Systems
Theory and practice of modern data base systems; data as a model of reality; architecture of current and proposed systems. Networks models, entity data model and relational models of data. Data independence, security, data base integrity, contention handling, data definition languages, data manipulation languages and their relation to current and proposed systems. Readings from current research literature. Two term-hours; lectures. Two term-hours; lectures. PREREQUISITE: Permission of the School.

CISC-833* Advanced Operating Systems
This course considers operating systems for distributed architectures covering the following topics: distributed system characteristics, process synchronization and communication, basic distributed algorithms, principles of fault tolerance, reliable broadcast, naming, file systems, load balancing, and layering. Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-834* Paradigms of Wireless and Mobile Networking
Consists of formal lectures and the study and discussion of research papers appearing in the current literature. Students will be expected to participate in the presentation of the lecture material. Topics chosen for study will be by arrangement with the School. Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-835* Empirical Software Engineering using Ultra Large Repositories
Consists of formal lectures and the study and discussion of research papers appearing in the current literature. Students will be expected to participate in the presentation of

the lecture material. Topics chosen for study will be by arrangement with the School. Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-836* Models in Software Development: Methods, Techniques and tools
Consists of formal lectures and the study and discussion of research papers appearing in the current literature. Students will be expected to participate in the presentation of the lecture material. Topics chosen for study will be by arrangement with the School. Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-837* Network Traffic and Resource Management
The course describes fundamental techniques, principles and technologies associated with network traffic and Quality of Service (QoS) management. The Broadband Integrated Services architecture and Asynchronous Transfer Mode are described. TCP/IP flow and congestion control and the Integrated and Differentiated Services architectures and their accompanying protocols and techniques for QoS management are detailed. The course includes studies of end-to-end resource management across heterogeneous domains and platforms. H. Hassanein PREREQUISITE: Permission of the School.

CISC-838* Software Engineering
Designing and constructing large software system: requirements analysis, architectural design, detailed design and specification, implementation, test planning, delivery, evolution. Project and configuration management issues. This course includes a team project. Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-839* Topics in Information Systems
Consists of formal lectures and the study and discussion of research papers appearing in the current literature. Students will be expected to participate in the presentation of the lecture material. Topics chosen for study will be by arrangement with the School. Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-841* Advanced Computer Architecture
Large uniprocessor design, including pipelining, cache management, lookahead and prefetch; array processors and algorithms; multi-processors, conventional multiprocessors, systolic arrays, data driven and demand driven architectures. Three term-hours; lectures and seminars. PREREQUISITE: Permission of the School.

CISC-842* Parallel Languages and Architectures
A study of the techniques necessary for developing complete parallel systems. This includes program development techniques in a parallel setting, parallel languages, compilation and transformation techniques, and properties of parallel architectures. The emphasis is on integrating solutions to each of these stages to provide practical parallel systems. Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-845* Requirements of Specifications and Design
Software system engineering. Essential elements of requirements. Natural and formal language specification. Software process models. Mathematical foundations. Model-oriented specification styles: informal (data flow, control flow, process-based, data models, object-oriented); operational (process-based, state machine, data models); set theory and logic. Property-oriented specification style: trace-based; event-based; abstract data type. Refinement of requirements to components. Tool support. Case studies. Three term-hours; lectures. PREREQUISITE: Permission of the School.

CISC-846* Software Design and Implementation
General characteristics of designs and design methods. Survey of design methods: information hiding; object-oriented design; state machine methods; data flow design. Module specification techniques: first-order logic; algebraic specification; trace specification; weakest preconditions; the refinement calculus; abstract modeling. Transition from design to implementation. Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-847* Software Verification and Validation
Formal techniques: proving programs correct, checking consistency and completeness. Inspections and reviews. Unit/module testing. White box and black box testing. System integration and testing. Tool support for testing. Faults vs. failures. Verification of implementation against both requirements and design. Techniques for critical software. Trust-worthiness vs. reliability. Timing analysis and verification. Safety analysis. Multi-version programming. Software quality assurance, software reliability. Debugging. Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-848* Software Reliability and Security
Software crisis and software process models, Software reliability and methods for reliable software, Software reliability engineering process, Software dependability, Software fault tolerance, Run-time software monitoring, Software security, Software

security engineering process, Network security, Intrusion detection. Three term hours: lectures and seminars. PREREQUISITE: Permission of the School.

CISC-850* Topics in Computer Applications and Algorithms l
Consists of formal lectures and the study and discussion of research papers appearing in the current literature. Students will be expected to participate in the presentation of the lecture material. Topics chosen for study will be by arrangement with the department. Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-853* Computer-aided Verification of Software Systems
Expressing concurrent systems using finite-state machines and Buechi automata. Expressing properties of systems: assertions, safety properties, liveness properties, temporal logic, specification patterns. Analyzing concurrent systems using model checking: algorithms, complexity, and optimizations. Academic and industrial model checking tools. Three term hours: lectures and seminars. PREREQUISITE: Permission of the School.

CISC-854* Computer Graphics
Advanced computer graphics with emphasis on physical modelling and rendering of realistic 3-d scenes. Topics include constructive solid geometry, parametric shape representations, kinematics and dynamics, photometry and surface reflectance, and ray tracing. Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC -855* Nonlinear Optimization
Methods for computational optimization, particularly examining nonlinear functions of vectors. Topics may include: unconstrained optimization; first-order methods; second-order methods; convex problems; equality constraints; inequality constraints; applications in machine learning. Three term-hours; lectures.

CISC-856* Reinforcement Learning
This course includes topics on formal and heuristic approaches to problem solving, planning, reinforcement learning, knowledge representation and reasoning, Markov decision processes, dynamic programming, temporal difference learning, Monte Carlo reinforcement learning methods, function approximation methods, integration of learning and planning. Three term-hours; lectures.
PREREQUISITE: CISC-352 or equivalent, programming expertise.

CISC-857* Image Processing
Examines the techniques used in digital image processing. Topics covered include image transformations (FFT, DCT, wavelets), linear and nonlinear filtering, image compression, image restoration and enhancement, Bayesian estimation of image properties, and image registration methods. Applications examined include medical imaging, motion analysis, remote sensing imagery (satellite and aircraft), and industrial imaging (inspection). Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-858* Programming Language Processors
An introduction to the systematic construction of a compiler: grammars and languages; scanners; top-down and bottom-up parsing; run-time organization; symbol tables; internal representations; Polish notation; syntax trees; semantic routines; storage allocation; code generation; interpreters. Three term-hours; lectures. PREREQUISITE: CISC-210, 363* and 366*, or permission of the School.

CISC-859* Pattern Recognition
An introduction to statistical and structural pattern recognition. Feature extraction and the feature space. Bayes decision theory. Parametric classification. Clustering methods. Syntactic pattern description: string, tree and graph grammers; attributed grammars; stochastic grammars. Error correcting parsing; parsing of stochastic languages. Assignments include practical experience in application areas such as character recognition and document image analysis. Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-860* Structure and Design of Programming Languages
Consists of formal lectures and the study and discussion of research papers appearing in the current literature. Students will be expected to participate in the presentation of the lecture material. Topics chosen for study will be by arrangement with the School. Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-861* Advanced Graphics
The course will cover historical and recent research in computer graphics. The instructor will give lectures on the physics of illumination, radiosity methods for light transport, Monte Carlo methods for light transport, visibility, and geometric problems. Students will give presentations on papers that they've chosen from the current research literature. Three term hours: lectures and
seminars. PREREQUISITE: Permission of the School. CISC-454 or equivalent.

CISC-865* Introduction to Programming-Language Theory
The language of while programs. Programming logics. Operational and denotational semantics. The typed and untyped lambda calculi. Recursive definitions and domain theory. Full abstraction. Three term-hours; lectures and seminars.
PREREQUISITE: CISC-222*/260* and CISC-202*, or permission of the School.

CISC-867* Deep Learning
Teaches algorithms and concepts about deep learning based on the biological neural network. Students will learn about deep belief network, restricted Boltzmann machine, Convolutional, Generative adversarial and Long Short Term Recursive NN and develop DNN using tools such as TensorFlow to perform feature extraction, image recognition and text processing. PREREQUISITE: COGS 400/ CISC 452/CMPE 452 or co-requisite CISC- 874

CISC-868* Computational Geometry
A study of fundamental techniques for developing effective algorithms and data structures to solve geometric problems. Topics include - algorithms for computing convex hulls, triangulations, minimum spanning circles, Voronoi diagrams; point location problems; intersection problems; path planning, and hidden surface algorithms. PREREQUISITE: CISC-365* or permission of the School. Three term-hours; lectures.

CISC-869* Advanced Topics in Programming-Language Theory
Consists of formal lectures and the study and discussion of research papers appearing in the current literature. Students will be expected to participate in the presentation of the lecture material. Topics chosen for study will be by arrangement with the School. Three term-hours; lectures and seminars.
PREREQUISITE: CISC-865* or permission of the School.

CISC-870* Fuzzy Logics
Consists of formal lectures and the study and discussion of research papers appearing in the current literature. Students will be expected to participate in the presentation of the lecture material. Topics chosen for study will be by arrangement with the School. Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-871* Algorithmic Graph Theory
An introduction to graph theory, and a survey of graph theoretic algorithms as applied to classic and contemporary problems in combinatorics and computer science. Topics include: colouring, isomorphism, connectivity, network flow, matchings, planarity,

shortest path problems, NP- completeness. Three term-hours; lectures and seminars.
PREREQUISITE: Permission of the School; CISC-202* or equivalent is recommended.

CISC-872* Parallel Algorithms
The design and analysis of parallel algorithms. Computational models. Complexity classes. Parallel algorithms for various problems including: basic arithmetic, sorting, searching, selection, graph theory, matrix computations, combinatorial enumeration, optimization, computational geometry, and numerical analysis.
Three term hours; lectures and seminars.
PREREQUISITE: Permission of the School. CISC-365* (or equivalent) is recommended.

CISC-873* Data Mining
Study of the extraction of concepts from large high-dimensional datasets. Statistical foundations; techniques such as supervised neural networks, unsupervised neural networks, decision trees, association rules, Bayesian classifiers, inductive logic programming, genetic algorithms, singular value decomposition, hierarchical clustering.
Three term hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-874* Foundations of Neural Networks
An introduction of the computational properties of neural networks. Topics may include: Learning Processes, Single Layer Perceptrons, Multilayer Perceptrons, Principal Components Analysis, and Self-Organizing Maps.
Three term hours; lectures and seminars.
PREREQUISITE: Permission of the School.

CISC-875* Bioinformatics
This inter-disciplinary course for students in the computational and life sciences looks at the application of computing techniques to molecular biology. Topics may include: DNA data analysis (genomics), secondary and tertiary structure analysis (nucleic acids and proteins), molecular scene analysis, evolutionary trees (phylogenetics), and computing with DNA. Three term hours; lectures and seminars.
PREREQUISITE: Permission of the School.
EXCLUSION: Jointly with BCHM-875*.

CISC-876* Computational Complexity
A systematic studyof the known relations between the most important resource bounded complexity classes. Reductions, separation results and translation techniques. Relativized computation. Topics may include also: Circuit complexity, Kolmogorov-

Chaitin complexity, Communication complexity. Three term-hours; lectures and seminars
Permission of the School. CISC-365* (or equivalent) is recommended.

CISC-877* Developing Digital Games
Consists of formal lectures and the study and discussion of research papers appearing in the current literature. Students will be expected to participate in the presentation of the lecture material. Topics chosen for study will be by arrangement with the School. Three term-hours; lectures and seminars. Permission of the School.

CISC-878* Advanced User Interfaces
Consists of formal lectures and the study and discussion of research papers appearing in the current literature. Students will be expected to participate in the presentation of the lecture material. Topics chosen for study will be by arrangement with the School. Three term-hours; lectures and seminars. Permission of the School.

CISC-879* Topics in Theoretical Aspects of Computing
Consists of formal lectures and the study and discussion of research papers appearing in the current literature. Students will be expected to participate in the presentation of the lecture material. Topics chosen for study will be by arrangement with the School. Three term-hours; lectures and seminars. Permission of the School.

CISC-880* Topics in Software Systems II
2018-19 topic: Mining Software Engineering Data
Consists of formal lectures and the study and discussion of research papers appearing in the current literature. Students will be expected to participate in the presentation of the lecture material. Topics chosen for study will be by arrangement with the School. Three term-hours; lectures and seminars. Permission of the School.

CISC-881* Topics in Biomedical Computing I
2018-19 topic: Medical Image and Signal Processing
Consists of formal lectures and the study and discussion of research papers appearing in the current literature. Students will be expected to participate in the presentation of the lecture material. Topics chosen for study will be by arrangement with the School. Three term hours: lectures and seminars. PREREQUISITE: Permission of the School.

CISC-882* Topics in Biomedical Computing II
Consists of formal lectures and the study and discussion of research papers appearing in the current literature. Students will be expected to participate in the presentation of

the lecture material. Topics chosen for study will be by arrangement with the School. Three term hours: lectures and seminars. PREREQUISITE: Permission of the School.

CISC-883* Introduction to Ultra Large-scale Software Systems
An introductory course in Ultra Large-scale Software Systems (ULSS). This course gives students an overview of the ULSS area covering a wide range of ULSS topics, while building and strengthening their independent research skills. Topics include research methods, large-scale applications, web services, hosted applications, software as a service, autonomic computing, and mobile applications. Three term-hours, lectures and seminars. PREREQUISITE: Registration in CREATE program in ULSS.

CISC-884* Practicum in Ultra Large-scale Software Systems
This course is an independent studies course to allow ULSS students the opportunity to gain experience with ultra large systems prior to their thesis or project (Pattern II). The student will propose a project to a CREATE professor that investigates issues relevant to Ultra Large Scale Software Systems. The project report will include a report on the current state of the art, the experiment performed, and the results. The student and supervising professor will meet on a regular basis. PREREQUISITE: Registration in CREATE program in ULSS.

CISC-885* Professional Development in Ultra Large-scale Software Systems
The Professional Development in ULSS course is designed to develop professional skills that complement students' qualifications and technical skills, and provides multidisciplinary skills relevant to careers in ULSS. These skills encompass aspects of intellectual property/commercialization; leadership and management; social responsibility; communication; and public relations. The course includes regular meetings with the instructor, seminars, and completing external workshops and certification (i.e., Expanding Horizons, MITACS, Ontario Centres of Excellence – VAP). PREREQUISITE: Registration in CREATE program in ULSS.

CISC-886* Cloud Computing
Cloud computing is a distributed computing paradigm where computing resources are provided in an on-demand manner. The goal of the courses is to introduce students to key concepts and techniques from cloud computing. The course focuses on issues such as system architectures, resource allocation and management, and approaches and systems for the storage, management and processing of data in cloud environments.

CISC-888* Advanced Research in Human-Computer Interaction
This is a topics-based course that presents a comprehensive set of research within the

broad range of activities in Human-Computer Interaction (HCI). Topics include eye-tracking input, digital desks, wearable computing, ubiquitous and context-aware computing, tangible interfaces and organic user interfaces. Each area will be treated in depth, on the basis of its scientific foundations. In addition, you will get important knowledge on the body of scientific work in HCI, practice of scientific evaluation, practice in advanced engineering with project-based deliverables. PREREQUISITE: CISC-325, CISC 425 or permission of the instructor.

CISC-897* Research Methods in Computer Science
This course provides an introduction to the primary and secondary sources of information in the computing science literature. The course includes work aimed at improving research skills. Students are required to submit and present a paper on a topic that relates to their research. Prerequisite: none

CISC-898 Master's Project
A major programming project is undertaken under the supervision of a School member. The presentation of a seminar to describe the project is required.

CISC-899 Master's Thesis

CISC-999 Ph.D. Thesis

CULTURAL STUDIES

CUST-800* Cultural Studies Theory
This course introduces students to a range of major theoretical strains within Cultural Studies such as those associated with Marxism, feminism, postcolonialism, and visual, critical race, Indigenous, and queer studies. Students will learn to mobilize key conceptual vocabulary of foundational and emerging frameworks of the field. Three term-hours. Winter. K. Zaiontz.

CUST-801* Critical Methodologies in Cultural Studies
The field of Cultural Studies is characterized by a refusal to endorse a singular method or to conceive of and apply methodological tools as rigid, formal templates. This course explores how scholars choose, mobilize, and combine methods including field research, archival research, research-creation, and textual analysis. Three term-hours. Not offered 2018-19.

CUST-802 Cultural Studies Colloquium
This course is designed to acquaint graduate students with both current work in the field and various professional issues, through a combination of research presentations and participatory workshops. Grading is on a Pass/Fail basis. Students are required to attend at least 50% of the sessions of this course during their first year in the program. Fall and Winter terms. J. Brison.

CUST-803* Cultural Studies Historiography
This course introduces students to key debates, concerns, and texts that have shaped the field of Cultural Studies over time, tracing multiple genealogies of the field in its international and interdisciplinary origins. Three term-hours. Fall. S. Rutherford.

CUST-804* Community-Based Research
As cultural producers, activists, and/or researchers, Cultural Studies students interact with various communities within, beyond, and on the margins of the academy. This course engages with the theoretical, political, practical, personal, and institutional challenges and opportunities of community-based research. Three term-hours. Winter. R. Kukreja.

CUST-805* Research-Creation Methodologies
This course is designed to support students whose intellectual approach combines creative and academic research practices. The course will value the development of knowledge and innovation through artistic expression, scholarly investigation, and experimentation.Three term-hours. Fall. D. Naaman.

CUST-806* Topics in Indigenous Studies
This course will examine issues pertaining to Indigenous knowledge, traditions, cultures, histories, and experiences. Three term-hours. Fall. L. Murray.

CUST-807* Settler Colonialism and Incarceration
A critical examination of issues raised by the intersection of settler colonial and carceral power. Three term-hours. Winter. L. Guenther.
EXCLUSION: PHIL-821*

CUST-815 Methods in Practice
This course offers specialized in-depth instruction in topics related to Cultural Studies Methodology. This micro-course allows for intensive study in a condensed format. One term-hour. Summer. E. Power. (1.0 credit units.)

CUST-816 Theory in Society
This course offers specialized in-depth consideration of a key theorist or theoretical school. This micro-course allows for intensive study in a condensed format. One term-hour. Winter. S. Rutherford. (1.0 credit units.)

CUST-817 Signs of the Times
This course offers specialized in-depth consideration of issues of contemporary social, political and cultural relevance. This micro-course allows for intensive study in a condensed format. One term-hour. Fall. A. Varadharajan. (1.0 credit units.)

CUST-890* Directed Studies I
Directed study under the guidance of a faculty member in an area of the instructor's expertise.

CUST-891* Directed Studies II
Directed study under the guidance of a faculty member in any area of the instructor's expertise.

CUST-892* Special Topics I
Directed study under the guidance of a faculty member in any area of the instructor's expertise.

CUST-893* Special Topics II
Special topics under the guidance of a faculty member in an area of the instructor's expertise.

CUST-894* Directed Community-Based Practicum
This course is intended to support a student's MA or PhD research through organizational and social experience gained from involvement with relevant off-campus institutions, organizations, and community groups. A CS faculty member will oversee each placement in collaboration with a member of the relevant organization or group. (Equal to other one-term course offerings, the internships are expected to be the equivalent of 1.5 – 2.0 days of work per week for 12 weeks.)

CUST-895* Agnes Etherington Art Centre Practicum
Internship in a professional art museum environment offering insights into collection research and development and an understanding of curatorial projects from conception through research and public presentation phases.

CUST-898 Master's Essay/Minor Project

CUST-899 Master's Thesis/Project

CUST-902 Cultural Studies Colloquium
This course is designed to acquaint PhD students with both current work in the field and various professional issues, through a combination of research presentations and participatory workshops. Grading is on a Pass/Fail basis. Students are required to attend at least 50% of the sessions of this course during their first year in the program. (6.0 credit units.)

CUST-990* Directed Studies I
Directed study under the guidance of a faculty member in an area of the instructor's expertise.

CUST-991* Directed Studies II
Directed study under the guidance of a faculty member in an area of the instructor's expertise.

CUST-999 Ph.D. Thesis or Project

EARTH AND ENERGY RESOURCES LEADERSHIP

EERL-801* Resource Life Cycle Overview
This course will progress through an overview of the entire resource life cycle for energy and mineral commodities. The geological nature of the resource itself, its role as a commodity, and environmental aspects associated with its development, will be considered. Concepts of sustainable resource management, including emphasis on other related natural resources, such as ground and surface water, will be studied. This is a core course of the Master of Earth and Energy Resources Leadership program. Fall. I. Taylor, H. Jamieson and J. Coleman

EERL-802* Strategic Leadership in the Resource Sector
This course will be structured around four key elements of the role of a General Manager, applied specifically to the management and leadership tasks inherent in the Resource Sector: Understanding business context and environment, providing direction and leadership, establishing priorities and meeting commitments, and leading change and innovation. This is a core course of the Master of Earth and Energy Resources Leadership program. Winter. D. Detomasi

EERL-803* Economic Essentials for Mining and Oil and Gas – Part I
This course covers the basics of investment, financial analysis, project finance and risk pertinent to the resource extraction industries. This includes investment opportunities, fundamentals of cash-flow analysis for decision making, risk analysis and project finance, and the relationship between projects and the enterprise. This is a core course of the Master of Earth and Energy Resources Leadership program. Fall. B. Kashi
PREREQUISITE: EERL-801*

EERL-804* Economic Essentials for Mining and Oil and Gas – Part II
This course will build on EERL-803 by broadening considerations from strictly financial measures to include integrated financial models which incorporate socio-economic and environmental considerations that are essential for decision making, stakeholder analysis, sustainable development, and negotiation and social license to operate.
This is a core course of the Master of Earth and Energy Resources Leadership program. Summer. B. Kashi PREREQUISITE: EERL-803*

EERL-805* Operating Effectively: Law, Policy, Regulation and Ethics
This course focuses on current and emerging legal, policy, and ethical issues at each stage of the resource discovery, acquisition, extraction, and closure process. Students will improve their understanding of land and resource rights; aboriginal rights;

corporate governance and social responsibility; climate change, environmental and resource regulation; permitting; community engagement and social license to operate; capital raising and disclosure obligations. This is a core course of the Master of Earth and Energy Resources Leadership program. Winter. A. Lintner

EERL-806* Communication, and Partnerships: Stakeholder Engagement Strategies
This course will address conflict management, leadership, and teambuilding strategies, while fostering collaborative efforts and working practically on implementing communication plans. The goal is to develop skills to address a multi-stakeholder business environment in the resource sector. This is a core course of the Master of Earth and Energy Resources Leadership program. Winter. S. von Hlatky

EERL-807* Technology and Innovation
This course will be comprised of a monthly series of online seminars throughout the duration of the program covering 4th and 5th terms. The seminars will be hosted by subject matter experts and will address specific technical, scientific, and innovation topics, relevant to energy and mineral resources as identified by the students. This is a core course of the Master of Earth and Energy Resources Leadership program. Fall, Winter, Summer, Fall. J. Hostyn and R. Harrap

EERL-808* Minerals Life Cycle Track
This course is a more in-depth study of the minerals life cycle, considering resource aspects of geoscience and engineering, along with social, environmental, business and economic attributes in an integrated manner. Both technical and non-technical risk aspects and concepts of sustainability will be considered. This is an elective course of the Master of Earth and Energy Resources Leadership program. Fall. G. Olimo and M. Doggett PREREQUISITE: EERL-801*

EERL-809* Energy Life Cycle Track
This course is a more detailed and in-depth study specifically on the energy resource life cycle, including exploration, development, processing, marketing, transport process. Topics will focus on conventional and unconventional petroleum resources. Resource and business/economic aspects considered in an integrated manner will be examined, and technical and non-technical risk will be considered. This is an elective course of the Master of Earth and Energy Resources Leadership program. Field/site visit fee may apply. Summer. P. MacKay PREREQUISITE: EERL-801*

EERL-810* Field-Based Synthesis
This course will provide intensive analysis of a case example that is an actual resource

development challenge related to either energy or mineral development, or both. Students will work in teams, as part of a field and/or site visit for approximately one week duration. Field trip fee may apply. This is an elective course of the Master of Earth and Energy Resources Leadership program. Field trip expenses approximately $1,500. Summer. J. Hutchinson PREREQUISITE: EERL-801*

EERL-811* Sector-Focused Project

This course provides flexibility for the student to focus on a topic of interest that is related to the content of the program, but not directly addressed by other course work. A student may bring a pertinent challenge from their work setting, or a project idea can be developed in consultation with the Program Director and program faculty. All project plans must receive approval of the Program Director prior to commencing this course. This is an elective course of the Master of Earth and Energy Resources Leadership program. Summer, Fall and Winter. V. Remenda PREREQUISITE: EERL-801*

ECONOMICS

*All courses are half-courses (with the exceptions of ECON-896, 898, 899 and 999), usually offered in the fall or winter terms. In addition, an attempt is made to offer a few courses during the spring/summer term. More detailed information on course offerings can be obtained from the department.

ECON-810* Microeconomic Theory
This course provides an in depth review of theories of demand, production, general equilibrium, market failures and welfare economics. In addition, selected topics in decision theory and game theory will be covered.

ECON-811* Advanced Microeconomic Theory I
This course provides a brief review of demand and production, general equilibrium and welfare economics. Topics such as core equivalence and efficient provision of public goods may be considered in depth. In addition, the course provides a substantial introduction to cooperative and non-cooperative game theory and its applications. Intended for Ph.D. students.

ECON-813* Advanced Microeconomic Theory II
This course provides in depth coverage of current topics in microeconomic theory. Topics will be drawn from: general equilibrium with and without uncertainty; non-cooperative games; equilibrium concepts and refinements; applications of game theory to principal agent models and models of screening and signaling; correlated equilibrium; repeated games; cooperative games, bargaining, auctions, common knowledge, implementation, evolutionary games and theories of learning. Intended for Ph.D. students.

ECON-815* Macroeconomic Theory
The first half of this course discusses the computation of aggregate variables and introduces students to dynamic models of long-run growth: the Solow model, the neoclassical growth model, overlapping generations models, and endogenous growth models. These are used to study long-run policy issues and the determinants of cross-country differences in per capita income and growth. The second half of the course introduces the student to real business cycle models and to the micro-foundations of models of nominal rigidities and non-market clearing. These are used to study the nature of short-run fluctuations and to evaluate macroeconomic policies related to stabilization, inflation, unemployment and the public debt.

ECON-816* Advanced Macroeconomic Theory I
This course will focus on fundamental tools of modern macroeconomic analysis. Specifically, recursive methods and their uses in stochastic applied general equilibrium theory. These uses include applications of both life-cycle and infinite horizon frameworks to savings and consumption, economic growth, fluctuations, and financial markets. Intended for Ph.D. students.

ECON-817* Advanced Macroeconomic Theory II
This course will apply the tools learned in ECON-816* to further topics. Some emphasis will be placed on numerical methods and computation. The topics considered will normally include search and matching, monetary economics, income and wealth inequality, and fiscal policy. Other topics may also be considered. Intended for Ph.D. students.

ECON-820* Money in the Macroeconomy
A course which uses elementary stochastic processes in the study of asset pricing under rational expectations (interest rates and inflation, volatility, bubbles, risk premiums, term structures), the demand for money, evidence on money in business cycles, the optimal quantity of money, and monetary policy (targeting, rules, credibility) in theory and practice.

ECON-821* Money and Financial Markets
This course examines topics in the microeconomic foundations of money, financial markets and financial intermediation.

ECON-825* International Trade
A course in the pure theory of trade and the theory of commercial policy and their applications. Both positive and normative aspects are considered.

ECON-826* International Finance
Macroeconomic and monetary theory in an open economy including topics such as: capital flows and models of the current account; international risk-sharing; sovereign debt; real and nominal exchange rates; currency crises; and the choice of exchange-rate regime.

ECON-830* Economic Development in North America
Focuses on long-term aspects of economic development in Canada and the United States placed within the context of the international economy. The course centres on trends in population, income, and their distribution, and examines the processes which brought them about. Included in this analysis is an examination of Rostow's take-off

thesis, the staples theory, and the growth accounting approach. Also included are such prominent issues as the roles of transportation, government intervention, migration and land settlement.

ECON-831* Issues in North American Economic History
A selection of issues is analyzed from the perspective of the new economic history as applied to Canada and the United States. Typically these would include the application of counterfactual conditional propositions, general equilibrium models, and economic theory to the study of institutional change. Offered jointly with ECON-430.

ECON-835* Development Economics
The first half of the course will focus mainly on microeconomic issues related to land and labor markets in the agricultural sector, credit markets and insurance, and duality. In particular, it will consider alternative views of the role and endogenous evolution of non-market institutions in the development process. The second half of the course will deal with several macroeconomic issues including rural-urban migration, the interactions between inequality and economic development, the interactions between population growth and technical change, and the contribution of internal factor accumulation versus TFP growth. The course will conclude with a conference in which students are expected to present and discuss recent papers in development economics. Offered jointly with ECON-435.

ECON-837* Cost-Benefit Analysis
A course covering the techniques and applications of cost-benefit analysis including project evaluation in the context of both developed and less-developed economies. Topics include: the welfare-economic foundations of cost-benefit analysis; investment decision rules; the choice of a social discount rate; risk and uncertainty; shadow pricing of inputs with and without distortions; and special problems of project evaluation. Other objectives such as income distribution and macro-economic goals are also considered. Offered jointly with ECON-437.

ECON-840* Public Economics I
Introduction to public economics with emphasis on public expenditure. The role of the public sector in the provision or regulation of private goods, public goods, shared goods, externalities and the redistribution of income. Deadweight loss and the marginal cost of public funds. Fiscal federalism.

ECON-841* Public Economics II
Normative and positive aspects of tax theory: optimal taxation and redistribution, more

on the marginal cost of public funds, the theory of tax reform, the effects of taxation on markets for goods, labour and capital, tax incidence, intergenerational transfers.

ECON-845* Industrial Organization I
A discussion of the elements of market structure, market conduct, and market performance. Topics include: alternative theories of firm behaviour including sales revenue and growth maximization, concentration of industry, economies of scale, barriers to entry, advertising, mergers, research and innovation, and generally monopoly power and economic performance.

ECON-846* Industrial Organization II
Topics include: i) regulation: the theory of the firm, pricing policy, distortions, political economy; ii) competition policy: analysis of policy in light of behavioural models of specific practices; and iii) quantitative studies: emphasis on integration of analytic framework and empirical investigation.

ECON 848* Economic Analysis of the Law
This course introduces students to the central tools and concepts of law and economics. It focuses on the application of law and economics analysis across a number of substantive legal domains, that may include property rights, contract law, tort law, crime, corporate law, competition law, litigation and discrimination law. The course incorporates theoretical, empirical and behavioural approaches to the economic analysis of law.

ECON-850* Econometrics I
This course deals with the foundations of econometrics. Topics include the method of moments, the geometry of ordinary least squares, hypothesis testing and confidence intervals, nonlinear least squares, instrumental variables, generalized least squares, the generalized method of moments, and maximum likelihood. Intended for Ph.D. students.

ECON-851* Econometrics II
This is a course intended for specialists in econometrics. It deals primarily with the asymptotic distribution theory of nonlinear least squares, generalized least squares, the generalized method of moments, and maximum likelihood. Other topics include specification testing, binary response models, and simultaneous equations estimators. Intended for Ph.D. students.

ECON-852* Quantitative Methods
A first course in econometrics at the graduate level. Students are expected to have had

at least one econometrics course at the undergraduate level, and to be familiar with matrix algebra and elementary statistics. A broad range of econometric models will be covered. (Offered jointly with ECON-450.)

ECON-853* Applied Econometrics
This course is an introduction to graduate level time series econometrics. The goal of the course is to provide a foundation in core time series methods that will permit students to undertake serious empirical work or pursue more advanced theoretical modeling. The topics include, but are not limited to, time series regressions, univariate and multivariate stationary time series models (ARMA and VAR models), forecasting, univariate and multivariate non-stationary time series models (trending data, unit roots, cointegration), and possibly some spectral analysis and generalized method of moments (GMM). The course focuses on time series methods that have been become popular and widely used in economics, and economic examples will often be used as motivation.
PREREQUISITE: ECON-852* or equivalent.
EXCLUSION: Students who take ECON-953* for credit cannot take ECON-853* for credit.

ECON-855* Introduction to Mathematical Economics
Applications of mathematics to economic analysis. Topics covered will generally include a review of optimization techniques, including nonlinear and dynamic programming, applied to consumer and producer theory; comparative statics; the envelope theorem; duality theory; welfare economics; and general equilibrium theory. (Offered jointly with ECON-455.)

ECON-856* Static Optimization and General Equilibrium Theory
The first part of the course covers the basic optimization techniques used in static economic analysis and their application to a number of problems in economic theory. The second part of the course is devoted to static general equilibrium theory. The major emphasis is placed on the proof of the existence of a competitive equilibrium and the proof of the classical optimality properties of competitive equilibrium. Other topics which may be covered include the computation of equilibrium, non-Walrasian equilibrium theory, n-person game theory and its applications to economic models, monopolistic competition, the Leontief economy, the two-sector general equilibrium model, duality theory, index numbers and aggregation. PREREQUISITE: A university course in multi-variable calculus and linear algebra and a reasonably good knowledge of microeconomic theory.

ECON-857* Dynamic Economic Theory
Covers the mathematics used in dynamic economic theory and its application to a

number of topics. These may include the stability of Walrasian and non-Walrasian economies, capital and growth theory, planning in developed and underdeveloped economies comparative dynamics, regulation and decentralization in mixed economies, the harvesting and extraction of reproducible and non-reproducible resources. PREREQUISITE: ECON-856* or permission of the instructor.

ECON-858* Experiments and Game Theory
The course will focus on the intersection of research in experimental economics and game theory. The dialogue between these fields has had an important influence on research topics for game theorists and on topics and methodology for experimentalists. There will be approximately equal weight on game theory and experimental methods and evidence. Game theory topics include evolutionary game theory, learning models, and the logic based models of knowledge and belief revision. The experimental topics will include design considerations and data analysis in the context of providing feedback for the development of the theory.

ECON-860* Empirical Micro-Economics I
The principal purpose of the course is to introduce students to contemporary empirical research in micro-economics. The course focuses primarily on the economics of household behavior, including labour supply, intra-household decision-making, marriage, fertility and search and matching models of labour and marriage markets. Equal attention is focused on the theoretical underpinnings of each subject, the empirical methods for testing the implications of micro-economic models and assessing the evidence that the application of these methods has produced.

ECON-861* Empirical Micro-Economics II
The principal purpose of the course is to introduce students to contemporary empirical research of micro-economics. The course focuses primarily on micro-economic models of human capital accumulation, duration analysis, signaling and agency problems. Equal attention is focused on the theoretical underpinnings of each subject, the empirical methods for testing the implications of micro-economic models and assessing the evidence that the application of these methods has produced.

ECON-870* Finance Theory
The course provides a detailed discussion of portfolio choice and asset pricing theory under symmetric information. In addition there will be a brief discussion of financial innovation and market frictions; connections with macroeconomic and international finance models; and some basic issues in corporate finance. NOTE: This course is cross-referenced with MGMT-820*.

ECON-871* Financial Systems: Theory and Applications
This course discusses the economic role of various types of financial intermediaries and financial markets. Topics include: the role of banks in facilitating financing flows between savers and borrowers; the role of payment systems, their problems and the evolution of electronic clearing systems; the evolution of the financial system and the changing role of institutions in accommodating new functions; financial regulation and deregulation. Examples will be drawn largely from Canada and the U.S.

ECON-872* Topics in Quantitative Finance
This course will cover a number of topics in financial econometrics. These will probably include testing the random walk hypothesis, autoregressive conditional heteroskedasticity, econometric methods for transactions data, event studies, testing the CAPM, and value at risk. Other topics that may be covered include models of the term structure, derivative pricing, and the econometrics of foreign exchange rates.

ECON-873* Financial Derivatives
This course covers forward, futures, swap, and option contracts. It deals with how the contracts work, how they are used, how they are valued, and how financial institutions hedge their positions in the contracts. The topics covered include Black-Scholes pricing, the use of binomial trees, and delta-gamma-vega hedging, the mathematics underlying the pricing of derivatives and the numerical procedures that are used to implement derivatives pricing models. It includes in-depth material on exotic options, interest rate derivatives, and credit derivatives. Other topics on risk management will be briefly discussed. NOTE: This course is cross-referenced with MGMT-821*.

ECON-880* History of Economic Thought
Most frequently the content of this course focuses upon the analytical structure of the main theoretical models that have been developed since Adam Smith; occasionally the lectures and readings cover broader topics such as the relation of economics to the other social sciences and to philosophy.

ECON-881* Economic Policy Formation
An examination of the economic aspects of recent policy formation in Canada: selected problems and issues. NOTE: This course is cross-referenced with SPS-844*.

ECON-882* Research Problems and Methodology
A general course in research methodology. Please refer to Departmental Handbook - QEDetails.

ECON-890* Natural Resource Economics
The objective of this course will be to examine the exploitation and conservation of natural resources and the implications of resource use for public policy, using the tools of economic analysis. The problems and issues that are specific to particular natural resources will be identified. Economic theory and quantitative methods will then be applied to an analysis of these problems, with special attention paid to policy implications generally and those of Canada in particular.

ECON-891* Environmental Economics
The course provides a rigorous theoretical treatment of environmental policy design. Although the emphasis will be on microeconomic modeling approaches, the course will also draw upon case studies of environmental policies. Topics covered include: the theory of externalities, Pigouvian taxes, performance and design standards, marketable permit systems, hybrid systems, policy instrument choice under uncertainty, design of regulatory mechanisms under asymmetric information, political economy of environmental regulation, monitoring and incomplete enforcement, and environmental negotiation.

ECON-896 Non-Research Master's Oral Examination

ECON-898 Master's Essay

ECON-899 Master's Thesis

ECON-910*, 911*, 912*, 913* Advanced Topics in Applied Microeconomics A, B, C and D
Advanced courses in applied microeconomics. Topics will be drawn from different fields but will be organized around applications of microeconomic theory. For example, similar applications of general equilibrium, game theory, contracts, asymmetric information, and incentive theory may be used to explore issues drawn from the range of applied micro fields. No more than two of these courses will be offered in any given academic year.

ECON-915*, 916*, 917*, 918* Advanced Topics in Applied Macroeconomics A, B, C and D
An advanced course in macroeconomic theory. Topics may include growth theory, search, heterogeneous agents, optimal macroeconomic policy, credibility and dynamic contracting.

ECON-950*, 951*, 954*, 955* Advanced Topics in Empirical Methods A, B, C, and D
The contents of this course will vary from year to year. In recent years, it has often dealt with simulation-based estimation, indirect inference, and bootstrap methods.
PREREQUISITE: ECON-850* and ECON-851*.

ECON-953* Applied Econometrics
This course is an introduction to graduate level time series econometrics. The goal of the course is to provide a foundation in core time series methods that will permit students to undertake serious empirical work or pursue more advanced theoretical modeling. The topics include, but are not limited to, time series regressions, univariate and multivariate stationary time series models (ARMA and VAR models), forecasting, univariate and multivariate non-stationary time series models (trending data, unit roots, cointegration), and possibly some spectral analysis and generalized method of moments (GMM). The course focuses on time series methods that have been become popular and widely used in economics, and economic examples will often be used as motivation.
PREREQUISITE: ECON-852* or equivalent
EXCLUSION: Students who take ECON-853* for credit cannot take ECON-953* for credit.

ECON-999 Ph.D. Thesis

The courses listed below are the required courses for the Graduate Diploma in Risk Policy and Regulation.

RPRD-801* Risk Management Theory and Applications
This course provides a critical review of standard risk management models and procedures in private banks and other financial institutions. It will explore current research that aims to improve risk management techniques and operations.

RPRD-802* Financial Institutions Theory and Practice
This course explores theories and practices explaining the role and operation of financial institutions and markets. It will explore current problems and puzzles that are specific to financial institutions.

RPRD-803* Financial Regulation
This course discusses current theory, practice and unresolved problems in financial regulation, especially in relation to controlling risks in financial institutions and the financial system.

RPRD-804* Advanced Topics in Risk Management and Regulation

This course will cover important current topics in financial risk management and regulation. The topics will require detailed analysis of topics suggested by academics and practitioners from the public and private sectors.

EDUCATION

The actual courses offered each term will be determined by student demand and the availability of faculty. Most courses will take the form of seminars and individual studies for a total of 36 hours. During the fall and winter terms courses normally require three hours per week. The 36 hours for each course are scheduled over four weeks during the summer term period.

NOTE: All EDUC-9xx courses are normally open only to Ph.D. students.

EDUC-800* Curriculum Design and Implementation
Explores the theory and practice of curriculum design. Theoretical bases and practical implications of different models of curriculum innovation in relation to curriculum policies and educational change will be examined. Applicable to both school and professional-based learning environments. Summer; TBA..

EDUC-801* Special Topics in Curriculum and Instruction
Topics vary from term to term. They include: the curriculum in such areas as Reading, Science, Mathematics, Counselling, Adult Education, English, Social Studies, Health Sciences, Aesthetic Education, Experiential Education, Language Education, etc.

EDUC-802* Curriculum Theory
Explores the theories and philosophies that have shaped the field of curriculum since the late 19th Century. Focuses on understanding the complex contexts of education, schooling, learning and teaching. Deepens awareness of the connections between the theories of curriculum and its manifestation through various teaching and learning practices. Fall; A.M. Hill.

EDUC-809* Assessment of Student Growth and Achievement
This course will address basic practices, procedures, and reporting of student assessment as these apply to students, classrooms and schools. Principles of sound teacher-made and standardized assessments of student growth and achievement will be the major topics studied.

EDUC-810* Topics in Literacy Education
This study of the current state of literacy education will include the following topics: definitions and philosophies of literacy in English pedagogy, social and cultural influences, literary theories, writing and reading pedagogies, practices of interpretation, current trends in literacy research, issues of assessment, and influences of media and technology on literacy.

EDUC-811* Second/Foreign Language Education
Current theories in Second/Foreign Language Education will be examined. Topics will include French as a Second Language, French Immersion, English as a Second Language, Foreign Languages, and the difference between acquisition and instruction.
EXCLUSION: EDUC-829*

EDUC-812* Adult Education
An introduction to adult education as a field of study and practice that fosters collaborative and learner-directed inquiry in the field of adult education. The course will focus on understanding how adults learn, developing and implementing effective curricula for adult learners, and helping adult educators reflect on the adult education process. It is suitable for all educators who want to learn more about adult learning issues, practices and concepts by applying adult learning theories to their own learning and teaching lives.

EDUC-813* Improving the Art of Teaching
Explores the art of teaching from scholarly and pedagogical perspectives. Literature includes teacher knowledge and thinking, strategies for improving professional development, and processes of change in school settings. The course will involve the use of approaches such as pattern, design, story, metaphor, rhythm, and mystery as strategies to enhance teaching and learning.

EDUC-815* Learning as Transformation
Transformative learning is the self-directed process by which we change the assumptions, beliefs, values or perspectives shaping our actions. The goal of this course is to help educators understand and promote transformative learning in our everyday lives and classrooms. The course approach will model its topic: we will use self-directed and transformative learning strategies in class sessions, and decisions about content and process will be the shared responsibility of the group and facilitator. Winter; E. MacEachren
EXCLUSION: EDUC-873*

EDUC-820* Psychological Foundations of Learning
An introduction to human learning and cognition with implications for instruction and assessment. Topics may include cognitive processes, motivation, situated cognition, and the application of educational psychology to subjects such as reading, writing, mathematics, and the arts. Fall; J, Shurr.

EDUC-821* Development of Language and Literacy
An examination of current theories of literacy development in multiple forms and the

related instructional approaches. Literacy is defined broadly; topics vary from year to year and may include the cognitive development of writing, digital literacy, and visual literacy. Winter; P. Beach.

EDUC-822* Inclusion of Exceptional Learners
An examination of the cognitive processing, social cognition, and learning characteristics of children, adolescents, and adults with a range of exceptionalities, including giftedness, intellectual/developmental disabilities, behavioural disorders, and learning disabilities. A major focus of this course will be on how we can successfully include people with exceptionalities in our classrooms and in our society.

EDUC-823* Psychology of Reading
An examination of current theories of reading processes and their implications for teaching reading and student learning from reading. One or more topics are covered in greater depth; topics vary from year to year and may include comprehension and study strategies, reading disabilities, the measurement of reading abilities, and word recognition skills. Pre- or corequisite: EDUC-820* or consent of instructor.

EDUC-824* Psychology of Learning Disabilities
An examination of the concept of learning disabilities, current theories of the causes of learning disabilities, and instructional approaches. Topics may include assessment, diagnosis and remediation, attention deficit and hyperactivity, social cognition and motivation, and adult learning disabilities. Winter; D. Berg.
Pre- or co-requisite: EDUC-820* or consent of instructor.

EDUC-826* Motivation in Education
A review of theories of motivation and their practical applications within educational and other applied settings. The course will focus on current principles of motivation and include topics such as psychodynamics, attribution theory, goal theory, goal orientations, competences, interest, intrinsic/extrinsic motivation and biocultural factors.

EDUC-827* Measurement in Learning
This course focuses on the principles of instrument development, use, and analyses for the measurement of educational outcomes and constructs. Course topics will include survey and test development, factor analysis, reliability and validity. Fall; L. Cheng.

EDUC-828* Program Evaluation
Determining the merit of educational programs requires that there be a fit between the needs and intentions of the program and the theoretical foundation guiding the

evaluation. Students in this course will examine competing theoretical models of evaluation and be able to argue for their uses in particular program contexts. Fall; M. Searle.

EDUC-830* Advanced Topics in Psychology of Learning and Cognition
An advanced course for treatment of current research interests of graduate faculty and students in Psychology of Learning and Cognition. Topics will vary from term to term. This course is designed for students who have a strong background in Psychology of Learning and Cognition. Fall; I. Matheson.

EDUC-833* Language and Learning
An examination of current theories and practices focusing on the role of language in learning. This course will focus on the study of language acquisition and development and their implications for education through topics such as syntax, lexicology, morphology, phonology, discourse analysis and pragmatics. Winter; M. Myers.

EDUC-842* Teaching and Learning in Mathematics, Science and Technology
This course will investigate theories of cognition and research on teacher practice as related to mathematics, science and technology. It will include an examination of assessment practices, use of Information and Communication Technology (ICT) in teaching and learning, and translation of curriculum policy into practice.

EDUC-850* Critical Theories in Educational Contexts
This course introduces students to critical theories in educational contexts and examines and critiques the organization of power around cultural difference, race, class, ethnicity and other social/cultural markers. Teaching practices and policies that contribute to positive social change will also be explored.

EDUC-852* History and Philosophy of Education
Policy issues from historical and philosophical perspectives. A seminar course that focuses on the history of thinking and intellectual trends influencing policy developments. This seminar will also include major thinkers and intellectual ideas from western and non western countries and their constellation in historical scenarios. Issues may include excellence, pluralism, democracy, diversity, equity, human rights, global issues in education, transnationality, intersection with transnational political and economic agencies, and others.

EDUC-855* Culture, Power and Knowledge: Looking to Possibility
Seminar participants will study issues pertinent to understanding the relationship between schooling and popular culture. Using the theories and methodologies of

postmodernism/poststructuralism, particular attention will be paid to the relationship between culture as a social artifact and its expressions within the practices of education in the new Millennium.

EDUC-860* Introduction to Theories of Organization and Organizational Behaviour

This course provides a survey of key concepts and theories of organization and of organizational behaviour as they apply to schools and other education-oriented organizations, including consideration of the premises and implications of competing paradigms within organization theory; consideration of emerging organizational concepts and theories as they may apply to educational organizations; and a critique of current organizational forms and practices in schools systems, with emphasis on Ontario, Canada and North America. Historical, philosophical and comparative perspectives relating to the various concepts and theories will be discussed as appropriate.

EDUC-861* Policy Studies in Education

This course will introduce students to a critical study of policy in general and of policies in education in particular. The intention of this course is to develop in students a critical awareness of the social construction of policy, of intended and contingent impacts of policy, and of the components constituting the policy cycle. The process of policy-making will be explored using various perspectives and understandings of the phases of policy development, implementation, and evaluation. Winter; B. Kutsyuruba.

EDUC-862* Educational Leadership

This course provides an historical overview of theories of leadership within educational institutions and an evolution of the practices of leadership. Participants will examine the social and cultural construction of leadership, will gain an understanding of the range of roles and responsibilities that a leader has within an organization; will apply effectively selected leadership skills and processes; and will develop conceptual frameworks to understand behaviours within the organization. Various theories of the attributes of a leader (e.g., trait, transformational, distributive, inclusive) are explored. Summer; TBA.

EDUC-871* Intro. to Indig. Lang.

The focus of this course is on Indigenous languages and language revitalization. We will also discuss Indigenous Englishes and English literacy. Assessment will be based on participation, as well as two submitted assignments: an abstract and a final project.

EDUC-872* Educational Research in Aboriginal and Indigenous Contexts
An introduction to educational inquiry that focuses on the principal Western approaches and on the design and implementation of research appropriate for Indigenous contexts. Topics may include oral traditions, narrative research, archival research, Indigenous epistemologies, decolonization of research methodology, and ethical concerns about intellectual property. The course provides initial preparation for thesis and project work and introduces students to the tools and conventions of educational inquiry: for example, library searches, use of primary and secondary sources, ethical review considerations, writing graduate assignments. Summer; TBA.

EDUC-873* Indig. Pedagogy & Practice
The course will focus on Indigenous worldviews and philosophies in the development of curriculum and instructional practice, including traditional conceptions of curriculum. Students will engage in theoretical and practical inquiry by exploring a range of research. Students will examine curriculum transformation in response to the Truth and Reconciliation Commission's Calls to Action.

EDUC-874* Special Topics in Aboriginal and Indigenous Education
Topics vary from term to term and may include: science education, place-based learning and teaching, revitalizing Indigenous language, current issues facing Indigenous educators worldwide, adult learning, culture and cognition and Aboriginal philosophy. Winter; TBA. Summer; TBA.

EDUC-875* Qualitative Inquiry: Orality in Aboriginal and Indigenous Thought
Prepares students to undertake research using qualitative approaches appropriate to Aboriginal and Indigenous contexts, such as narrative studies based in oral traditions, and their impact on Aboriginal thought, participant observation, and ethnography. Fall; TBA.
Prerequisite: EDUC-872 or permission of instructor.

EDUC-876* Government Policies within an Indigenous Context
Will prepare students to examine current government policies in relation to Indigenous populations and communities within Canada. This course will explore how policies have been initiated, developed and implemented, taking into consideration their relevance to Indigenous education. Students will also learn to analyse the extent to which Indigenous worldviews have been reflected at different stages of the policy cycle.

EDUC-877* Teaching & Assessing Students with Special Needs in Aboriginal and Indigenous Contexts
An examination of current theories on the contextual and individual factors

contributing to special needs and how these theories can inform teaching which appropriately addresses special needs in Aboriginal and Indigenous contexts.

EDUC-878* Master's Internship
A research-informed internship in a context that enables learning through experience, under the guidance of an approved mentor, about issues germane to Aboriginal and World Indigenous Educational Studies. The Internship will be evaluated by a member of the Graduate Faculty approved by the Associate Dean of Graduate Studies and Research, Faculty of Education.

EDUC-880* Educational Internship
This internship entails an authentic work experience opportunity for student experiential learning at the graduate level. The internship involves students in research, teaching, and/or professional contexts that provide practical learning related to the student's program of study. The internship will be supervised by the internship host in conjunction with a designated faculty member, normally the student's supervisor. The internship will be approved by the Associate Dean of Graduate Studies and Research, Faculty of Education and evaluated by the designated faculty member supervisor and internship host. The duration of an internship is normally one term (four months). Internships can be paid or unpaid. Securing an internship is the responsibility of the student. This course is mandatory for those students enrolled in the dual degree program. The grading will be Pass/Fail.

EDUC-888* Advanced Special Topics in Cultural and Policy Studies
Topics vary from term to term, and reflect current research interests of the graduate faculty. Fall; A. Butler. Winter; K. Timmons.

EDUC-890* Introduction to Educational Research
An introduction to educational inquiry and its principal approaches. The course involves students in activities associated with educational inquiry, and is an initial preparation for thesis and project work. Because the course is introductory, it exposes students to the tools and conventions of educational inquiry: for example, library searches, use of primary and secondary sources, writing graduate assignments. Fall; B. Bolden & L. Colgan.

EDUC-892* Topics in Quantitative Research
Prepares students to undertake quantitative research in education. Basic methodological problems, statistical design and reasoning are among the topics addressed. Winter:TBA.
PREREQUISITE: EDUC-890* or permission of instructor.

EDUC-895* Topics in Qualitative Research
Prepares students to undertake research using qualitative approaches such as case studies, participant observation, document analysis, and ethnography. Winter; L. Airton & J. Pyper
PREREQUISITE: EDUC-890* or permission of instructor.

EDUC-896* Individual Study
A study selected by the student under the guidance of a member of the graduate faculty. Normally, this half course will take the form of a closely supervised reading course in the area of the instructor's expertise.

EDUC-897* Individual Study
A study selected by the student under the guidance of a member of the graduate faculty. Normally, this half course will take the form of a closely supervised reading course in the area of the instructor's expertise.

EDUC-898 Master's Project
An investigation under the guidance of a Project Supervisor terminating in a written report or essay, under the current degree requirements having the equivalence of two half courses. The project is evaluated by the Project Supervisor and one other member of the graduate faculty approved by the Associate Dean of Graduate Studies. (Refer to Graduate Studies in Education: A Handbook.)

EDUC-899 Master's Thesis
A research endeavour under the guidance of a Thesis Supervisor, under the current degree requirements having the equivalence of four half courses. The thesis is completed and examined in accordance with the regulations of the School of Graduate Studies.

Note: All EDUC-9xx courses are normally open only to Ph.D. students.

EDUC-900* Doctoral Seminar
This is a required course for all doctoral student taken over the fall and winter terms in their first year of study. Faculty and students will present seminars of an interdisciplinary nature. Students registered in the course will be required to present one of the seminars. Grading will be pass/fail. This course is designed to explore the various research paradigms, methods of research, and the problems related to research design. Fall; L. Cheng. Fall/Winter; T. Christou.

EDUC-901* Advanced Special Topics
Topics vary from term to term and reflect current research interests of the graduate faculty and doctoral students. Fall; A. Butler.

EDUC-903 Special Topics in Research Methods
This course enables doctoral students an opportunity to develop skills in specific research methods Topics vary from term to term and reflect current research interests of the graduate faculty and doctoral students. The course consists of modules that focus on contemporary methods for research, and each module is equivalent to a quarter course weight (1.5 credit units).

EDUC-910* The Traditions of Curriculum
A research seminar on the development of curriculum as a field of study. It considers the influence of measurement, psychology, philosophy, and literary theory on curriculum during the 20th century and into the present. Attention is given to the intended curriculum, the enacted curriculum, the learned curriculum, and the interactions among them. The course encourages a critical approach to curriculum issues and practice. Fall; A.M. Hill.

EDUC-911* Contemporary Curriculum Theory
The course is designed to extend doctoral candidates' knowledge of curriculum theory and criticism. By construing curriculum as a tension between individuals and society, the course considers the impact of contemporary thought on central curriculum concepts like knowledge, subject matter, assessment, teaching, and learning. Winter; C. Ahn.
PREREQUISITE EDUC-910*

EDUC-920* Cognition and Learning
A seminar course reviewing current research and theories of cognition and learning as applied to education. Topics will include cognitive processes, language, and development. Fall; J. Shurr.

EDUC-922* Social Cognition
A seminar course reviewing current research and theories of social cognition as applied to education. Topics will include situated cognition, self-regulation, and motivation. Fall; I. Matheson.

EDUC-924* Advanced Topics in Cognitive Studies
An advanced research seminar in Cognitive Studies. Topics will vary and reflect the research interests of students and faculty. Winter; K. Timmons.

PREREQUISITE: EDUC-920* and EDUC-922* or permission of instructor
EXCLUSION: EDUC-921*.

EDUC-930* Issues in Cultural and Global Studies in Education
A seminar course that introduces students to critical social theories, current approaches to cultural analysis, theories of identity, sub-cultural positionings, to the practice and implications of social/cultural theories and global issues.

EDUC-931* Issues in Culture and Technology Studies in Education
A seminar course that introduces students to current critical thinking on technology, imagined within the largest possible framework as the human built world, and as such, as a cultural and social endeavour.

EDUC-932* Seminar in Policy Studies
A seminar course that introduces students to theoretical underpinnings of policy studies and a more in-depth understanding of the processes and challenges of developing, implementing, analyzing, and evaluating policy from different perspectives. The course will examine the construction and deconstruction of educational policy through the lenses of various theoretical frameworks. This course will develop students' insight, knowledge and skills in multiple uses of policy within the historical, social, and political contexts through the discussion of specific policy issues and case studies of policy in practice.

EDUC-933* Advanced Studies in History and Philosophy of Education
This course will discuss a variety of topics in educational policy from the perspectives of philosophy and history of education. Various schools of thought, both philosophical and historical, will be considered in discussing policies.

EDUC-934* Advanced Topics in Cultural and Policy Studies
An advanced seminar course in critical social theories, current approaches to cultural analysis, theories of identity and sub-cultural positioning, and the theories and processes of developing, implementing, analyzing and evaluating policy.
PREREQUISITE: one of EDUC-930* or EDUC-932*
EXCLUSION: EDUC-931*.

EDUC-940* Educational Assessment
Current theories and practices in generating and interpreting student assessment data are changing the way we measure achievement and learning. Using such data obtained from classrooms, schools, school boards, provincial, national and internal assessment programs, this course explores the use and impact of these evolving theories and

practices. Winter; C. DeLuca.
PREREQUISITE EDUC-892* or equivalent and EDUC-827* or equivalent.

EDUC-942* Program Evaluation
Expanding purposes and contexts for program evaluation draw on multiple theoretical frameworks and methodologies. Exploring evaluation decision making from these multiple perspectives provides insights into the scope, limitations and future territory of evaluation use.
PREREQUISITE: EDUC-828* or equivalent.

EDUC-980 Educational Internship
This internship entails an authentic work experience opportunity for student experiential learning at the graduate level. The internship involves students in research, teaching, and/or professional contexts that provide practical learning related to the student's program of study. The internship will be supervised by the internship host in conjunction with a designated faculty member, normally the student's supervisor. The internship will be *approved* by the Associate Dean of Graduate Studies and Research, Faculty of Education and *evaluated* by the designated faculty member supervisor and internship host. The duration of an internship is normally one term (four months). Internships can be paid or unpaid. Securing an internship is the responsibility of the student. The grading will be Pass/Fail.

EDUC-996* Individual Study
A study selected by the student under the guidance of a member of the graduate faculty. Normally, this half course will take the form of a closely supervised reading course in the area of the instructor's expertise.

EDUC-997* Individual Study
A study selected by the student under the guidance of a member of the graduate faculty. Normally, this half course will take the form of a closely supervised reading course in the area of the instructor's expertise.

EDUC-999 Ph.D. Thesis

The following courses are the courses offered under the Graduate Diploma in Professional Inquiry (GDPI). All courses are 3.0 credit units.
REQUIRED COURSES
GDPI-800* Self-Regulated Inquiry and Learning
Provides opportunities for exploration of current theories of self-regulated learning. Self-regulated learning requires autonomous management of learning through effective

goal setting, resource allocation, valid self-assessment, and goal revision. Offered jointly with PME-800*.
EXCLUSION: PME-800*

GDPI-801* Collaborative Inquiry
This course will enable the student to understand the foundational principles of collaborative learning and to enact those principles in professional practice. This, in turn, will lead to the creation of a collaborative learning community within the context of the course where the knowledge and skills of professional inquiry will be explored and demonstrated. Offered jointly with PME-801*
EXCLUSION: PME-801*

GDPI-802* Program Inquiry and Evaluation
This course will guide students in conducting systematic evaluative inquiry in support of the data-informed program decision-making. Students will examine the multiple purposes of program evaluation applying the principles, methods and logic inherent in the needs of targeted program personnel and decision makers. Offered jointly with PME-802*.
EXCLUSION: PME-802*

ELECTIVE COURSES
GDPI-810* Integrated Planning, Instruction, and Assessment
This course will enable students to inquire into the interconnected structures of planning, instruction, and assessment through an understanding of curricular frameworks. Students will understand the complexities of their intended work environments and apply that understanding to analyze planning, instruction, and assessment to a specific context of practice. Offered jointly with PME-810*.
EXCLUSION: PME-810*

GDPI-811* Innovation in Teaching and Learning
This course will help students develop a foundational understanding of innovation in the workplace grounded in exploration of historical, sociological, and philosophical contexts and frameworks. Students will explore case studies and develop a plan of action rooted in the particular needs of their workplace. Offered jointly with PME-811*.
EXCLUSION: PME-811*

GDPI-812* Organizational Learning
The goals of this course are to examine theory, research and case-studies on organizations in public service sectors using professional inquiry approaches. Topics will include organizational theory, structure and bureaucracy, organizations and their

environments, human resources, politics, decision-making, leadership and organizational change. Ultimately, this course will prepare students to apply the concepts covered in the course to their professional context. Offered jointly with PME-812*.
EXCLUSION: PME-812*

GDPI-813* Knowledge Translation and Mobilization
Knowledge translation (KT) and mobilization (KMb) includes efforts to strengthen connections between research, policy and practice in public service sectors. This course looks at the theory, science and practice of KT/ KMb in order to enable practitioners to find, share, assess and apply evidence in their particular professional setting. Offered jointly with PME-813*.
EXCLUSION: PME-813*

The following courses are the courses offered under the Professional Master of Education (PME). All courses are 3.0 credit units.

PME-800* Self-Regulated Inquiry and Learning
Provides opportunities for exploration of current theories of self-regulated learning. Self-regulated learning requires autonomous management of learning through effective goal setting, resource allocation, valid self-assessment, and goal revision. Offered jointly with GDPI-800*.
EXCLUSION: GDPI-800*

PME-801* Collaborative Inquiry
This course will enable the student to understand the foundational principles of collaborative learning and to enact those principles in professional practice. This, in turn, will lead to the creation of a collaborative learning community within the context of the course where the knowledge and skills of professional inquiry will be explored and demonstrated. Offered jointly with GDPI-801*.
EXCLUSION: GDPI-801*

PME-802* Program Inquiry and Evaluation
This course will guide students in conducting systematic evaluative inquiry in support of the data-informed program decision-making. Students will examine the multiple purposes of program evaluation applying the principles, methods and logic inherent in the needs of targeted program personnel and decision makers. Offered jointly with GDPI-802*.
EXCLUSION: GDPI-802*

PME-803* Organizational Leadership
This course provides an overview of theories of leadership and an evolution of the practices of leadership within organizations in general, and educational institutions in particular. Participants will examine the social and cultural construction of leadership, will gain an understanding of the range of roles and responsibilities that a leader has within an organization; will apply effectively selected leadership skills and processes; and will develop conceptual frameworks to understand behaviours within the organization.

PME-810* Integrated Planning, Instruction, and Assessment
This course will enable students to inquire into the interconnected structures of planning, instruction, and assessment through an understanding of curricular frameworks. Students will understand the complexities of their intended work environments and apply that understanding to analyze planning, instruction, and assessment to a specific context of practice. Offered jointly with GDPI-810*.
EXCLUSION: GDPI-810*

PME-811* Innovation in Teaching and Learning
This course will help students develop a foundational understanding of innovation in the workplace grounded in exploration of historical, sociological, and philosophical contexts and frameworks. Students will explore case studies and develop a plan of action rooted in the particular needs of their workplace. Offered jointly with GDPI-811*.
EXCLUSION: GDPI-811*

PME-812* Organizational Learning
The goals of this course are to examine theory, research and case-studies on organizations in public service sectors using professional inquiry approaches. Topics will include organizational theory, structure and bureaucracy, organizations and their environments, human resources, politics, decision-making, leadership and organizational change. Ultimately, this course will prepare students to apply the concepts covered in the course to their professional context. Offered jointly with GDPI-812*.
EXCLUSION: GDPI-812*

PME-813* Knowledge Translation and Mobilization
Knowledge translation (KT) and mobilization (KMb) includes efforts to strengthen connections between research, policy and practice in public service sectors. This course looks at the theory, science and practice of KT/ KMb in order to enable practitioners to find, share, assess and apply evidence in their particular professional setting. Offered

jointly with GDPI-813*.
EXCLUSION: GDPI-813*

PME-820* Aboriginal Leadership and Knowledge in the School and Classroom
The primary expected outcome of this course is an understanding of Aboriginal approaches to education, leadership, and knowledge from the perspective of Culture-Based Education. Students are encouraged to engage in peer-to-peer learning to expand upon their own awareness and challenge preconceptions. Because of this, this course is encouraged for students from all backgrounds with varying levels of cultural awareness.

PME-821* Policy and Models in Canadian Aboriginal Education: From Residential Schools to Culture-Based Education
This course examines the history of Aboriginal education policy and models for Aboriginal education in Canada. It begins with an examination of Aboriginal approaches to education prior to and at contact, then goes on to discuss colonial approaches, including the Residential school system. Following this, it will examine post-colonial policy and education across provinces and First Nations.

PME-822* Aboriginal Languages and Language Teaching
This course examines the diversity and current status of the Aboriginal Languages of the Americas, including their distribution, status, structure, use, and connection to culture. Students will then gain an overview of language teaching methodologies and an examination of the selection of appropriate methodologies for Aboriginal language teaching and language programming.

PME-826* Using Classroom and Large-Scale Assessment Data
This increasing emphasis on school accountability and improvement places demands on teachers and administrators to be able to interpret the meaning of assessment results. These data often form the foundation for setting priorities and setting targets. Given this importance of these activities it is critical that data users be able to identify the strengths and limitations of these data in supporting decision-making.

PME-827* Planning and Implementing Classroom Assessment
The assessment of learning and achievement is a global phenomenon. Over the last 2 decades there has been considerable research demonstrating how well conceived assessment can be a powerful force both in supporting learning, and as a mechanism for individual empowerment. Yet, no matter how clearly assessment policies are defined, how concisely strategies for implementing assessment are described, and how many sample instruments are available for adoption or adaptation, the planning and

implementing of assessment in classrooms continues to be a complex "wicked problem".

PME-828* Conducting Quality Program Evaluations
Educators plan and implement programs as a way to address the needs of students and their communities. These needs may be rooted in learning, recreation, behaviour, school culture and health and well-being to name a few. Typically, classroom and school based programs are spearheaded by individual champions or working groups. Their focus is typically on program activities and the challenge of implementation. Rarely do they have the time or resources to learn, in any systematic way, how their programs are working or how they might be improved. This is an issue especially when decisions have to be made about whether programs should be supported, expanded, continued or allowed to end.

PME-831* Innovative Curriculum Planning
Leaders in classroom practice are innovative curriculum planners. A review of the historical and philosophical roots of innovation in education will lead to an exploration of contemporary curriculum and instructional innovations such as those that now promote curriculum integration, learning in depth, and environmental inquiry. Students will have opportunities to practice innovative curriculum planning paying close attention to how the curriculum is intended to shape learning.

PME-832* The Connected Classroom
Leaders in classroom practice help learners make strong connections to the world outside the classroom. This course examines the foundations of why, when and how to enlarge the context for learning and explores avenues that yield integrated and authentic learning experiences. Examples of connectedness are found in classrooms that connect to students' experiences at home, integrate opportunities for informal education, encourage the involvement of community members, foster community service, and cultivate relevant and appropriate uses of the internet. The focus of learning will be on how to trigger, facilitate and enrich learning through outreach activities.

PME-833* Critical and Creative Thinking
Leaders in classroom practice are concerned with the quality of both their own and their students' thinking. This course provides guided opportunities to investigate and implement newer frameworks for practice, especially those intended to support students in becoming independent and innovative thinkers. Decisions about how learning is structured and managed and how students participate and interact will be

considered in light of their potential to propel students' thinking forward, deeper and in more creative directions.

PME-841* Theoretical and Historical Foundations of Literacy
This course provides an overview of the history of literacy instruction and currently accepted theories of literacy development. Participants will develop conceptual frameworks to understand literacy from cognitive and sociocultural perspectives and will gain an understanding of the how these different perspectives condition the range of roles and responsibilities of an instructional leader of literacy education.

PME-842* Component Skills
This course introduces students to the components of literacy, including phonological awareness, decoding, reading comprehension, vocabulary and reading fluency and others. Participants will gain an understanding of how these components interact to contribute to literacy development in a range of readers.

PME-843* Effective Intervention
This course builds on PME-842 (Literacy: Component Skills) to acquaint participants with research-based interventions and effective programming for a variety of literacy outcomes. Participants will gain an understanding of how these interventions meet the learning needs of typical and exceptional learners and how success of these interventions is measured.

PME-851* Culture, Curriculum and Pedagogy
This course requires students to explore their roles as curriculum theorists within the daily, lived experiences of overseas classroom teaching. The role of cultural difference within the interconnected structures of planning, instruction, and assessment will be explored as it relates to the impact of daily teaching and learning in overseas contexts. Students will articulate the complexities of cultural difference and apply that understanding to analyze planning, instruction, and assessment.

PME-852* Approaches to Professional Learning
This course will explore the particular role and place of inquiry within an International school teaching context. Students will broaden and deepen their knowledge of professional resources and publications for overseas educators. They will learn about the types of inquiry most relevant to overseas educators, how to gather, analyze, interpret and articulate various forms of data.

PME-853* Professional Community Membership
Students will explore their roles and responsibilities related to the dissemination of the

knowledge they gain through their own professional learning. As overseas educators, often confronted by cultural differences in their everyday teaching, finding ways to share new information and ideas on how to acknowledge these differences in the classroom is a professional obligation. Students will be expected to find appropriate outlets for a variety of written articles (opinion pieces, practical tips and tricks, professional inquiry data…etc.)

PME-898* Capstone Project

This is a self-directed course that allows professionals to explore an aspect of their emerging leadership within the context of developing and completing a capstone project. The purpose of this project is to enable students to more deeply explore the current and relevant educational challenges and issues within their own practice and/or organization. Students enrolled in this course will work independently with an instructor who will help guide the completion of the capstone project, providing suggestions, direction, and clarity. The grading will be Pass/Fail.

ELECTRICAL AND COMPUTER ENGINEERING

APSC- 896* Engineering Leadership and Innovation
This course is designed to develop a range of skills essential for engineering professional practice in both the public and private sectors. The course will focus on; Engineering Leadership and Innovation including its application in project management. The course content will be presented through lectures, case studies, panel discussions and an interactive serious game.

ELEC-811* Biological Signal Analysis
The course begins with a general discussion of the electrical signals which arise in biological systems. Mechanisms of biological signal generation and models of signal production are introduced, with an emphasis on the neuromuscular system and the myoelectric signal. Signal acquisition and instrumentation are discussed. Signal processing of the myoelectric signal, in the time and frequency domains, is covered. A basic knowledge of random signal processing is recommended. Three term-hours; lectures, Fall. E.L. Morin

ELEC-823* Signal Processing
This is a fundamental graduate level course in statistical signal processing that assumes prior familiarity with digital signal processing concepts for deterministic signals, including topics such as digital filters and discrete Fourier transforms.
Topics include: spectral analysis and modeling; linear prediction; adaptive algorithms; cyclostationary signals; wavelets; hidden Markov modeling. Applications will be drawn from several fields, including multimedia and biological signal processing.
Three term hours; lectures. G. Chan

ELEC-827* Multimedia Signal Processing
Study of multimedia signal processing for network mediated human-human communication and human machine interaction (HMI). Topics covered include: overview of multimedia applications and processing functions; speech production; human auditory and speech perception; image formation; human visual perception; perceptual quality and user experience modeling; speech and image analysis and synthesis methods; lossless and lossy compression techniques; coding for communication and storage; sensing modalities for HMI; machine learning algorithms for information extraction and understanding.Three-term-hours; lectures. Permission of instructor. G. Chan.

ELEC-830* Emerging Technologies in power grid
Renewable energy generation; wind and Photovoltaic energy conversion; energy storage; distributed energy generation; hybrid systems; Power electronics interfaces and control. Grid- connected distributed sources. Stand-alone operation of distributed sources and micro-grid systems. System protection. Economical dispatch. Centralized and decentralized control. Smart grid.

ELEC-831* Power Electronics
Fundamentals of loss-less switching techniques: zero-voltage switching, zero-current switching. Resonant converters: series, parallel and series-parallel topologies; Soft-switching converters: natural and auxiliary commutation converter topologies; Control techniques: variable frequency, phase-shift and hybrid control. Applications to single-phase three-phase and multi-level converters. Special emphasis will be placed on the design techniques using practical examples. Three term-hours, lectures.P. Jain. PREREQUISITE: ELEC 431 or permission of instructor.

ELEC-832* Modeling and Control of Switching Power Converters
This course covers the modeling and control techniques for switching power converters. Small signal models and large signal models will be presented. Peak current mode control and average current mode control for switching power converters will be investigated. System stability issues when several power supplies are connected together are investigated and solutions are presented and analyzed. Digital control techniques, using FPGA or DSP, will be investigated and analyzed. Conventional fuzzy logic control and improved version of fuzzy logic control will be analyzed in detail. Sliding mode control and sliding mode like control will be analyzed. Digital control techniques for AC-DC converter with power factor correction will be analyzed. It is expected the students will do a project based one or more of the above mentioned techniques. Three term-hours, lectures, fall. Y.F. Liu.

ELEC-836* Power Systems Design for Telecommunications
Overview of advanced telecommunication networks and powering requirements: central office equipment, optical networks, Fiber-In-The-Loop systems, and hybrid fiber/coax networks. Powering alternatives: low frequency distribution, dc distribution and high frequency distribution. System modeling and simulation. Stability of the power system. Special emphasis will be placed on the design techniques using practical examples. Three term-hours, lectures. P. Jain PREREQUISITE: ELEC 431 or permission of instructor.

ELEC-837* High Power Electronics
Introduction. Power semiconductor devices. Line- and force-commutated converters.

High power ac/dc and dc/ac converter structures and switching techniques. Principles of HVDC and HVAC systems. Large and small scale stabilities, sub-synchronous resonances, inter-area oscillations, voltage sags, and harmonic instability. Voltage, power angle, and impedance control, phase balancing, and power factor correction by means of solid-state power converters. Flexible AC Transmission Systems (FACTS). Three term hours; lectures, Winter. A. Bakhshai

ELEC-841* Nonlinear Systems: Analysis and Identification
Analytical methods for nonlinear systems; nonlinear difference equation models: functional expansions and Volterra, Wiener and Fourier-Hermite kernels; kernel estimation techniques; identification of cascades of linear and static nonlinear systems; use of Volterra series to find region of stability of nonlinear differential equations; applications to pattern recognition, communications, physiological systems, and non-destructive testing. Three term-hours; lectures, Fall. M.J. Korenberg

ELEC-843* Control of Discrete-Event Systems
Study of discrete-event processes that require control to induce desirable behaviour. Topics include: basic automata and language theory; modeling of processes using automata (finite-state machines, directed graphs); centralized and decentralized problems; nonblocking supervisors; partial observation; and computational complexity. Connections with manufacturing systems and communication protocols are emphasized. Three term-hours; lectures, Fall. K. Rudie

ELEC-848* Control Systems Design for Robots and Telerobots
This course provides an overview of manipulator modeling, and presents and analyzes many different control architectures designed for robots and telerobots. Topics include introduction to robotics and telerobotics; serial manipulator forward and inverse kinematics, Jacobian, singularities and dynamics; robot position and force control methodologies and their stability analyses; bilateral teleoperation control architectures, stability and performance issues due to communication delays and environment uncertainties. Three term hours, Lectures, Winter. Dr. K Hashtrudi-Zaad

ELEC-852* Broadband Integrated Circuits
Topics covered include broadband and ultra-wide band circuit design techniques with applications to wireless and lightwave systems. Broadband amplifiers, mixers and active filters are discussed using radio frequency, microwave and millimeter-wave methods. Three term hours; lectures.

ELEC-853* Silicon RF and Microwave Circuits
This course presents an introduction to the design of RF and microwave circuits using

silicon technologies. Topics include: an overview of silicon technologies; the design of passive structures including transmission lines, inductors, and couplers; considerations in the layout of active devices; examples of the design of circuit components on silicon; system design including integrated system-on-chip designs; and a look at the future of silicon high-speed circuits. Three term-hours, lectures; Winter. B. Frank
Prerequisite: ELEC-483 or equivalent

ELEC-854* Microwave Circuits and Systems
Investigation of the design and performance of wireless circuits and systems at microwave and millimeter-wave frequencies. Topics include: communications transceivers, millimeter-wave imaging systems, RFID, radar systems, transmission lines and passive circuits, resonators, microstrip and lumped element low-pass and bandpass filters, amplifier noise and linearity, diode and transistor mixers, LC and relaxation oscillators, frequency multipliers and dividers, phase shifters, FSK QPSK and GMSK modulators and demodulators. Three term hours; lectures. C. Saavedra.

ELEC-858* Principles of Microwave Imaging and Remote Sensing
This course is an overview of the physical and engineering principles of microwave imaging and remote sensing. Topics include: electromagnetic wave propagation, polarized and partially polarized waves, polarimetric synthesis and decomposition, wave diffraction, wave scattering from smooth and rough boundaries, scattering and emission of waves from natural surfaces, passive microwave detectors, radar fundamentals, radar altimeters, radar image construction, polarimetric radar, non-ideal imaging effects such as speckle and geometric distortion. Applications of microwave imaging to the earth sciences will be discussed.

ELEC-861* Probability, Random Variables and Stochastic Processes
The review of probability theory including probability spaces, random variables, probability distribution and density functions, characteristic functions, convergence of random sequences, and laws of large numbers. Fundamental concepts of random processes including stationarity, ergodicity, autocorrelation function and power spectral density, and transmission of random processes through linear systems. Special random processes, including Gaussian processes, with applications to electrical and computer engineering at a rigorous level. Three term-hours; lectures. S. Gazor

ELEC-862* Wireless Mobile Communications
This course covers wireless mobile and satellite communication systems. The main topics of this course are: Introduction to the basic concepts of wireless mobile systems and standards, Propagation modeling, Co-channel interference, Modulation techniques with applications to mobile communications (PSK, ASK, OFDM, etc.), Digital signaling

on flat fading channels and diversity techniques, Equalization and digital signaling on ISI channels, Error probability performance analysis, CDMA and multi-user detection, Cellular coverage planning, Link quality measurements and handoff initiation, Introduction to satellite mobile communications, Third generation global mobile communication standards. Three term-hours; lectures. M. Ibnkahla

ELEC-863* Topics in Optical Communications
Selected topics in optical communications will be studied. Possible topics include semiconductor lasers, optical modulators, modulation formats, multiplexing and demultiplexing techniques, optical fibers, dispersion compensation, optical amplifiers, optical receivers, system performance, optical time division multiplexing, optical signal processing (e.g., wavelength conversion, optical regeneration, clock recovery), passive components, optical networks, and applications (e.g., access, metro, long-haul, ultra-long haul). Three term-hours,
lectures, Fall. J.C. Cartledge

ELEC-864* WDM Fiber Optic Communication Systems
This course presents the fundamentals of fiber optic communications, with focus on dense wavelength division multiplexed (DWDM) systems. Topics: components (lasers, modulators, receivers, and optical fibers) and detailed study of system issues in DWDM transmission (interplay between fiber dispersion and non-linearities, transmitter chirp, optical amplification, and polarization mode dispersion). Three term hours, lectures. S. Yam

ELEC-865* Coding Theory
The problem of reliable data transmission; communication and coding; error-detecting and error-correcting codes; classification of codes; introduction to algebra; linear block codes; cyclic codes; algebraic decoding,shift register encoding and decoding of cyclic codes; convolutional codes; Viterbi decoder; trellis codes; trellis decoding, trellis structure of codes; graphical representation ofcodes, block- and trellis-coded modulation, codes defined on graphs, turbo codes, iterative decoding, low-density parity-check codes. Three term-hours,
lectures.S. Yousefi

ELEC-866* Signal Detection and Estimation
Vector space concepts. Hypothesis testing. Signal detection in discrete time including performance evaluation methods and sequential detection. Parameter estimation, including Bayesian, maximum-likelihood and minimum-variance unbiased estimation. Signal estimation in discrete time, including Kalman filtering, linear estimation, and

Wiener filtering. Applications include communications, sensor array, image processing, and target tracking. Three term-hours; lectures. S.D. Blostein.

ELEC-867* Data Communication
Channel characterization and transmission impairments, performance evaluation, baseband pulse transmission, linear modulation, frequency and phase modulation, detection theory and system optimization, equalization, coded modulation. Three term-hours; lectures. P.J. McLane.

ELEC-868* Simulation of Optical Communications Systems
The objective of this course is to bring the student up-to-speed in the simulation of optical communications systems. It will introduce the students to the underlying principles of optoelectronic devices, waveguide propagation, digital communication basics and coding. It will present current mathematical modeling of devices and components useful for the simulation of a full-fledge optical transmission link. Both through theory and using the modeling software (OptiSystem or equivalent) as a basis for simulation tool, students are expected to develop an understanding of the critical aspects and trade-offs that characterizes optical communication systems. The modeling software has cosimulation with MATLAB so additional models/functions can be included as the course develops. Prerequisites: ELEC 381 (Applications of Electromagnetics) and ELEC 422 (Communications Signal Processing), or equivalent

ELEC-869* MIMO Communications Systems
This course introduces fundamental theories of multiple-input multiple-output (MIMO) communications systems and design of space-time codes. Topic includes: MIMO channel models; capacity of MIMO systems; transmit and receive diversity; design criteria for space-time codes; space-time block codes; space-time trellis codes; layered space-time codes; differential space-time block codes; combined space-time codes and interference suppression; super-orthogonal space-time codes; variable rate space-time block codes. Three term-hours, lectures.
I. Kim

ELEC-871* Shared-Memory Multiprocessor Systems
This course provides a comprehensive overview of shared-memory multiprocessing. Topics include: shared-memory programming, system and application software considerations, cache coherence protocols, memory consistency models, small-scale and large-scale shared-memory architectures, and case studies to explore practical considerations in multiprocessor systems ranging from single-chip implementations to scalable high-performance platforms.Three term hours; lectures. Winter. N. Manjikian

ELEC-873* Cluster Computing
This course covers topics related to network-based parallel computing systems. Issues related to clusters and computational "grid" such as interprocessor communications, message-passing and mixed mode paradigms and programming techniques, high performance interconnects, efficient host-network interface for fast messaging, lightweight user-level messaging layers and protocols, (network interface-assisted based) collective communications, communication latency tolerance techniques, power-aware high-performance computing, high performance file systems and I/O, benchmarking and performance evaluation, scheduling and load balancing, system-level middleware and computational grid applications and services will be discussed, Research papers from literature, a term paper and hands-on programming and experiments on a network of workstations will supplement the course. Three term-hours; lectures. A. Afsahi

ELEC-874* Computer Vision
High level computer vision approaches, methods and applications. Topics covered include pose determination and tracking; object and object class recognition; video processing; motion analysis and change detection; range image acquisition and registration; and applications. Three term hours, lectures. M. Greenspan
PREREQUISITES: ELEC-474* or permission of instructor.
EXCLUSION: ELEC-824*

ELEC-875* Software Design Recovery and Automated Evolution
Design recovery is the extraction of a design model from the artifacts of an existing software system. This design model is used to continue the evolution of the system. The model can be used in the planning and impact analysis stage, while making the changes and to test the result. The extracted design model can also be used to automate each of these tasks to varying degrees. Topics include design models, design recovery techniques, software evolution tasks, the semantics of programming languages and execution environments, and source code transformation. Three term-hours, lectures, Winter, T. Dean.

ELEC-876* Software Reengineering
This course covers software reengineering techniques and tools that facilitate the evolution of legacy systems. This course is broken into three major parts. In the first part, the course discusses the terminology and the processes pertaining to software evolution. In the second part, the course provides the fundamental reengineering techniques to modernize legacy systems. These techniques include source code analysis, architecture recovery, and code restructuring. The last part of the course focuses on specific topics in software reengineering research. The topics include software

refactoring strategies, migration to Object Oriented platforms, quality issues in reengineering processes, migration to network-centric environments, and software integration. Three term-hours, lectures, Fall, Y. Zou

ELEC-878* Computer Communications
Introduction to computer networks. Layered network architecture, the physical (PHY) layer, link layer, medium access control (MAC), network layer, routing, quality-of service (QoS), security, Internet applications. Wireless local area networks (LANs), metropolitan area networks (MANs), ad hoc networks, and cellular networks. IEEE 802 standards. Future of computer communications. Three term-hours, lectures. C.H. Yeh.

ELEC- 879* Wearable and IoT Computing
This course focuses on recent advances and computing trends in wearable technologies, mobile devices, the Internet of Things (IoT), smart homes, and smart vehicles. The history, background, and applications of these systems are reviewed, followed by the description of common sensing technologies often utilized in these devices. Signal/time-series analysis techniques, machine learning algorithms, and computing methods that are often utilized in such applications will be covered in detail. The course is highly applied and students will complete a project and present their results.

ELEC-880* Machine Learning for Natural Language Processing
Human (or natural) language data permeate almost all aspects of our daily life. This course covers basic machine learning approaches to modelling natural language, including fundamental supervised and unsupervised methods for modelling sequences and structures in the data. Based on this, students learn how to develop various applications such as chatbots and information extraction systems. The course will also include state-of-the-art artificial intelligence and deep learning approaches to natural language processing.

ELEC-891 Seminar
ECE graduate students must register in this non-credit course for the duration of their degree program. The student is given a Pass grade for this course upon attending a majority of seminars designated by ECE.

ELEC-895* Industrial Internship I
The industrial internship involves spending a minimum of 4 months and a maximum of 8 months in a paid internship position in industry, government, or other suitable employment opportunities. Students in the 4 month internship must register in ELEC-895*. Students in the 8 month internship must register in ELEC-895* and ELEC-896*. Successful completion of the course requires submission of a report on the industrial

project within thirty days of completion of the work period. Each project must be approved by the academic supervisor. Career Services manages the non-academic aspects of the course.

ELEC-896* Industrial Internship II
See ELEC-895*.

ELEC-898 M.Eng. Project

ELEC-899 M.Sc. Thesis Research

ELEC-999 Ph.D. Thesis Research

ADVANCED UNDERGRADUATE ELECTIVE COURSES
Courses listed below may be taken for credit, subject to the regulations set forth in the departmental prescription above and those of the School of Graduate Studies. Descriptions can be found in the Faculty of Engineering and Applied Science Undergraduate Calendar for 2003-2004.
ELEC-421*, 431*, 436*, 443*, 448*, 451*, 454*, 461*, 464*, 470*, 471, 476*, 478*, 483*, 486*, 487*, SOFT-423, 426, 437.

ENGLISH LANGUAGE AND LITERATURE

Full courses designated as Studies and half courses designated as Topics offer the study of a single work, a group of related works, an author or authors within the period or grouping indicated. The content of these offerings will vary from year to year. Not all the courses listed below will be offered in any one year, and a few are offered infrequently. A list of expected offerings with detailed description of course contents will be sent to applicants as soon as it can be drawn up.

ENGL-800* Introduction to Professional and Pedagogical Skills I
This course introduces M.A. students to the scholarly study and teaching of English literature. The emphasis will be on training Teaching Assistants. There will be practical training in research skills, essay-marking, the academic counselling of students, and first-time teaching. There will also be some consideration of academic and non-academic careers for M.A.s. This course is graded on a Pass/Fail basis. Three term-hours; fall. M. Wallace.

ENGL-802* Practical Criticism
This course will provide students with the necessary tools to practice and to teach "close reading" in a broad range of genres from different historical and national contexts. Students will engage in textual analysis through a series of practical exercises combined with readings of critical essays representing different approaches to the reading of literature.

ENGL-803* Research Forum I
A regularly scheduled forum in which faculty, advanced doctoral students, and visiting scholars present model research problems and methodologies for discussion. Attendance is required. Graded on a Pass/Fail basis. Various speakers.

ENGL-810 Literary Criticism
Representative critical approaches from Aristotle to the moderns will be considered with particular attention to those, which have most influenced contemporary attitudes.

ENGL-811* Literary Theory I
Not offered 2018-19.

ENGL-812* Literary Theory II
Not offered 2018-19.

ENGL-813* Literary Theory III
Not offered 2018-19.

ENGL-815* Topics in Literary Study I

Topic: From Metafiction to Real Fiction

Description: In a recent interview, novelist Rachel Cusk said she found fiction "fake and embarrassing" and referred to the creation of plot and character ("making up John and Jane and having them do things together") as "utterly ridiculous." Karl Ove Knausgaard went even further, perhaps, when he stated that "just the thought of a fabricated character in a fabricated plot" made him "feel nauseous." This course on metafiction and on what I have called "real fiction" will explore the trend in recent writing to dispense with the 'pretenses' of plot and characters to create 'novels' that problematize further or even erase the difference between fiction and non-fiction. We will begin with a consideration of contemporary metafiction before moving on to these recent permutations of the blurring between fiction and reality. The initial section on contemporary metafiction will likely include works by J. L. Borges, John Barth, Julio Cortàzar, Grace Paley, Javier Cercas, Enrique Vila-Matas, and Jonathan Safran Foer; the second section on "real fiction" will include works by W. G. Sebald, Lydia Davis, Karl Ove Knausgaard, Geoff Dyer, Teju Cole, John Haskell, and Rachel Cusk. Three term-hours; winter. Y. Schlick.

ENGL-816* Topics in Literary Study II
Not offered 2018-19.

ENGL-817* Topics in Literary Studies III

Topic: Publishing Practicum

Description: This seminar takes students through revision and submission stages from draft essay to article publication. The first section of the course will be devoted to discussion of the differences between coursework papers and published articles, and to a presentation and peer revision cycle of each student's work. The second section of the course will discuss how to decide where to send article submissions, how to present them, and what to expect of the process. If there is time, we will build in a conference proposal/presentation stage. Students must have a complete draft essay to bring to the start of the course and be ready to welcome reading and response from peers. Success in the course requires regular attendance, constructive participation, revision responsive to instructor and peer review, and submission to an appropriate scholarly

venue for publication. Note: Doctoral students are strongly urged to enroll in this course, and while the course is open to all students, doctoral students will have enrolment priority. Three term-hours; winter. M. Wallace.

ENGL-818* Topics in Literary Study IV
Not offered 2018-19.

ENGL-819* Introduction to Bibliography
Not offered 2018-19.

ENGL-820 Anglo-Saxon and Beowulf
Not offered 2018-19.

ENGL-821* Topics in Anglo-Saxon Literature I
Not offered 2018-19.

ENGL-822 Old Norse
Not offered 2018-19.

ENGL-823 Studies in Medieval Literature
Not offered 2018-19.

ENGL-824* Topics in Medieval Literature I
Not offered 2018-19.

ENGL-825* Topics in Medieval Literature II

Topic: Medieval and Tudor Morality Plays: Allegories of the Self

Description: Morality Plays of the late medieval and Tudor periods are among the most ribald and entertaining material of their day. Major influences on early modern drama, including Marlowe's Faustus and Shakespeare's Tempest, the plays focus on the construction of the self, the monarch, and the body politic. In doing so, they demonstrate the movement from religious to political allegory in the context of the Reformation and the beginning of the early modern state.

The class will read a selection of morality plays from 15th and 16th century England and Scotland, including Mankind, Everyman, The Castle of Perseverance, John Skelton's Magnificence and selections from A Satire of the Three Estates, as well as an additional four plays chosen by the class. All plays will be read in the original Middle English (or Middle Scots), but students will receive help and instruction in acquiring the

skills needed to read and pronounce the language. As the plays were written for performance, the class will also contain a performance component, largely in order to experiment with staging. When possible we will view videos of performances in modern day stagings. Three term-hours; fall. R. Wehlau.

ENGL-826* Topics in Medieval Literature III

Topic: Medieval Travel Literature and Ethnography

Description: This course explores the representations produced by medieval travelers—pilgrims, crusaders, missionaries, merchants, and emissaries, among others—in the high and later Middle Ages, largely focused on medieval Europeans but with some reference to other traditions. As medieval people traveled to distant lands, they encountered peoples and customs different from their own. We will analyze how medieval people wrote about ethnic differences and, in doing so, consider the discourses available to the medieval person to frame their experience of difference. While medieval travel writing was bound up with the system of auctoritas and thus heavily indebted to preceding traditions, travelers could and did produce alternative ways of seeing the world. We will explore the tensions between the universalizing discourses of Christendom and the individual experience of the traveler, charting the evolving patterns of ethnographic and geographic thought in relation to changes wrought by centuries of contact and exchange of information between Europe and its "others." We will also investigate some notable Jewish and Muslim travelers and their visions of globalism. Three term-hours; spring. M. Pappano.

ENGL-827* Topics in Medieval Literature IV
Not offered 2018-19.

ENGL-828* Chaucer
Not offered 2018-19.

ENGL-830 Studies in Early Modern Literature and Culture
Not offered 2018-19.

ENGL-831* Topics in Early Modern Literature and Culture I

Topic: Classical and Popular Traditions

Description: When Christopher Marlowe and William Shakespeare began their careers as playwrights in the late 1580s and early 1590s the commercial theatre was a new cultural form and the type of play it would traffic in, the secular, five-act drama in

English, with its highly developed plots and subplots and psychologically compelling character effects was only beginning to be imagined. Shakespeare and the other playwrights who developed this form did so by borrowing and blending features from both the popular, vernacular religious drama of the late Middle Ages and the classical Latin drama that they encountered at grammar school but which very few people in their audience would have been able to read. These traditions carried very different ideas about representation, theatrical space and cognition. Put another way, they carried different assumptions about the ontological and epistemological implications of acting and theatrical mimesis generally. The course is founded on the proposition that the power and conceptual open-endedness of Renaissance drama stems from the conversation, clashes and slippages between these traditions we can detect in the plays of Shakespeare and his contemporaries.

In this course we will read examples from these dramatic traditions that Elizabethan dramatists inherited. Then we will read some of the greatest and possibly most familiar plays these dramatists went on to write, looking at the ways in which they borrowed from, transformed and derived meaning from these earlier traditions. Because the vernacular religious drama, the Latin drama of the schoolroom and the commercial theatre were all known to audiences and playwrights through performance, we will approach all the plays in the course as performance texts, analyzing the way they use space and embodiment as well as language and train ourselves to think diachronically about the artisanal practices of playwrights and the competencies of their audiences. Our goal will be to recognize where elements of Renaissance drama came from and how their meaning persists or alters in new representational contexts, and thereby cultivate an awareness of the diverse forms virtual experience can take. Three term-hours; winter. E. Hanson.

ENGL-832* Topics in Early Modern Literature and Culture II
Not offered 2018-19.

ENGL-833* Topics in Early Modern Literature and Culture III
Not offered 2018-19.

ENGL-834* Topics in Early Modern Literature and Culture IV
Not offered 2018-19.

ENGL-835* Topics in Early Modern Literature and Culture V
Not offered 2018-19.

ENGL-836* Topics in Early Modern Literature and Culture VI
Not offered 2018-19.

ENGL-840 Studies in Restoration and Eighteenth-Century Literature
Not offered 2018-19.

ENGL-841* Topics in Restoration and Eighteenth-Century Literature I
Not offered 2018-19.

ENGL-842* Topics in Restoration and Eighteenth-Century Literature II

Topic: Literature in the Age of Sensibility and the Sublime

Description: The great neoclassical satirists Alexander Pope and Jonathan Swift died in 1744 and 1745, respectively. The passing of these writers, who had defined the forms and standards of literary expression for decades, marked a watershed in English poetry: "For who durst now to poetry pretend?" asked one anonymous writer in 1744. This course will examine the attempts of later eighteenth-century authors to fill this perceived void on their own terms. Rather than continue to emulate the traditional ideals of Augustan Rome, authors of the 1740s and following sought to cultivate native British traditions, to define themselves against Pope in particular, and to define an aesthetic in tune with human emotion and the natural world, redefining and revaluing concepts of fancy and imagination, reorganizing the canon of English authors, elevating genres such as the lyric (the ode) and the novel. We will read poetry, literary theory and criticism, and novels by some of the following: Alexander Pope, Anne Finch, Joseph Addison, James Thomson, William Collins, Joseph and Thomas Warton, Edmund Burke, Thomas Gray, Frances Greville, Laurence Sterne, Henry Mackenzie, James Macpherson, Oliver Goldsmith, Ann Yearsley, Ann Radcliffe. Three term-hours; winter. C. Fanning.

ENGL-843* Topics in Restoration and Eighteenth-Century Literature III

Topic: The First Information Age: 'Intelligence' in the Eighteenth Century

Description: Samuel Johnson's Dictionary (1755) defines intelligence as the "commerce of information; notice; mutual communication" and the "account of things distant or secret." This course will query Johnson's equation of information and intelligence by taking a good look at eighteenth-century Britain's cultural explosion of newspapers, magazines, periodical essays, encyclopedias, dictionaries, and prints. It will consider public experimentation; theatrical, musical, and book reviewing; the growth of the museum; the influence of circulating libraries; and other modes of producing and

disseminating information in the period. Readings will include selections from the Spectator, the Idler, the Gentleman's Magazine, the Universal Magazine of Knowledge and Pleasure, the annals of the Royal Society, and papers plucked from other assorted corners of the virtual coffeehouse. Participants will be expected to contribute to class discussion (20%) concerning the weekly readings; to complete a research presentation on a particular media environment or production process (30%); and to design and complete a major research project or paper on a topic of their own devising, in consultation with the instructor (50%). Three term-hours; fall. L. Ritchie.

ENGL-844* Topics in Restoration and Eighteenth-Century Literature IV
Not offered 2018-19.

ENGL-850 Studies in Romantic Literature
Not offered 2018-19.

ENGL-851* Topics in Romanticism I
Not offered 2018-19.

ENGL-852* Topics in Romanticism II

Topic: The Emergence of the Romantic Sublime

Description: Emerging from theoretical discussions of the 18th century, the sublime takes its most fully developed form in the poetry and fiction of the Romantic Period. The works of Blake, Wordsworth, Shelley, and Keats will be read through Longinus's conceptualization of the sublime as an aesthetic experience that depicts the "genius" or "inward greatness of soul" in the author, the vastness of the natural world, and the power of writing to transport the reader outside the rational self. In addition, Gothic works by Radcliffe and Monk coupled with the parody Gothic of Austen's Northanger Abbey will round out the course as examples of the transformations of sublime aesthetics into fictional forms. These literary works will be supplemented through background readings on the theory of the sublime as developed in John Dennis, Joseph Addison, and Edmund Burke. Three term-hours; winter. J. Pierce.

ENGL-853* Topics in Romanticism III
Not offered 2018-19.

ENGL-854* Topics in Romanticism IV

Topic: Consuming the Opium-Eater: Thomas De Quincey

Description: Some addicts commit suicide. Others overdose. Still others manage to avoid both these fates and stay alive. They are "the ones who may well go on to write abuse confessionals," Stuart Walton declares in Out of It (2002), "and each is a distant descendant of De Quincey." This course examines Thomas De Quincey's seminal narratives of drug addiction, including Confessions of an English Opium-Eater and its sequel, Suspiria de Profundis. It then examines the impact of these texts on some of De Quincey's major "descendants," including Wilkie Collins, Arthur Conan Doyle, Malcolm Lowry, Peter Ackroyd, Ann Marlowe, and Carlyn Zwarenstein. Three term-hours; fall. R. Morrison.

ENGL-855* Studies in Victorian Literature
Not offered 2018-19.

ENGL-856* Topics in Victorian Literature I
TBA. Three term-hours; winter.

ENGL-857* Topics in Victorian Literature II
Not offered 2018-19.

ENGL-858* Topics in Victorian Literature III
Not offered 2018-19.

ENGL-859* Topics in Victorian Literature IV
Not offered 2018-19.

ENGL-860 Studies in Modern and Contemporary Literature and Culture
Not offered 2018-19.

ENGL-861* Topics in Modernism I

Topic: T. S. Eliot and Virginia Woolf

Description: T. S. Eliot and Virginia Woolf were almost exact contemporaries (born in 1888 and 1882, respectively), readers and critics of each other's work, and close friends for over twenty years. Although they are rarely considered together as a pair, and despite some radical differences in political outlooks, Eliot and Woolf exemplify some of the most fascinating contestations at the heart of literary modernisms: aesthetic and formal innovation, cultural critique, gender troubling, and explorations of the sacred and the secular after Nietzsche's "the death of God." Together we will consider some of the striking correspondences and affinities that exist in Eliot and Woolf's poetic and thematic preoccupations as we read Eliot's major poetry from "The Love Song of J.

Alfred Prufrock," to The Waste Land, Ash-Wednesday, and Four Quartets, and engage with several of Woolf's most important novels and prose pieces, including To the Lighthouse, Mrs. Dalloway, "A Sketch of the Past," and The Waves. Theorists considered will likely include Henri Bergson, Friedrich Nietzsche, and Sigmund Freud.

Course requirements: Essay; seminar presentation; attendance and engaged in-class participation, including a short recitation of some poetry or prose from Eliot or Woolf. Three term-hours; spring. G. McIntire.

ENGL-862* Topics in Modernism II

Topic: Literature and Culture of the Spanish Civil War

Description: A study of poems, memoirs, journalism, fiction and other forms of cultural production inspired by the Spanish Civil War (1936–1939). Widely regarded as the opening act of the Second World War (though its veterans were derided as "premature anti-fascists") the war against Franco's Fascist-backed coup in Spain inspired volunteers from 53 nations to migrate to that country in support of the cause. As Auden famously put it, they heard the call of Spain "on remote peninsulas, / on sleepy plains, in the aberrant fishermen's islands…"; they "heard and migrated like gulls or the seeds of a flower…. They floated over the oceans; / They walked the passes: they came to present their lives" (EA 211–12). They did so, however, in what rapidly became a lost cause. This course will examine the literature and culture, primarily but not exclusively in English, inspired by this war. Authors considered will include George Orwell, Nan Green, John Cornford, Margot Heinemann, Tom Wintringham, Jack Lindsay, Ernest Hemingway, Martha Gelhorn, Edwin Rolfe, Langston Hughes, Norman Bethune, Dorothy Livesay and Ted Allen, and we will look at anthologies of elegiac poetry (many no longer in print) from Britain, Canada and the United States. We'll also pay attention to the small newspapers and literary magazines publishing elegiac tributes to the veterans, most notably the soldiers' own publication, Volunteer for Liberty. We'll give some consideration, too, to the visual art inspired by the war (the paintings of Picasso, Miro, and Dali, the documentary photography of Robert Capa), and especially to the much belated memorials produced in memory of the volunteers across Britain, the United States and Canada. Theoretical and historical questions we'll address include why so much about this war and its volunteer effort has been forgotten by governments and mainstream media; why it has been such an object of nostalgia on the political left; why the critical language devised for the literature of the Great War is so inadequate to account for it; the place of women both in the work of the war and in its iconography; the role of the war in changing the face of journalism and in inspiring a resurgence of

certain modernist literary practices rejected by the political left in the 1930s. Three term-hours; winter. P. Rae.

ENGL-863* Topics in Modernism III
Not offered 2018-19.

ENGL-864* Topics in Modernism IV

Topic: The Naked Truth: Modernism, Sexuality, and Sex

Description: This course looks at the provocative imagination and meaning of sex and sexuality in modernism, from avant-garde to popular literature, and dallying with film. We will study early twentieth-century sexual theories as well as obscenity laws and censorship in contexts of ideas of gender and race, and of critiques of consumer and image culture. A provisional list of authors includes Gertrude Stein, James Joyce, Bruce Nugent, D. H. Lawrence, Djuna Barnes, C. L. Moore, Raymond Chandler, and Nathanael West. Other figures of interest, fictional and nonfictional, will include Betty Boop, King Kong, Marlene Dietrich and Josephine Baker. Evaluation is based on weekly critical reviews, a seminar presentation with discussion, and a research essay. Three term-hours; winter. G. Willmott.

ENGL-865* Topics in Contemporary Literature and Culture I
Not offered 2018-19.

ENGL-866* Topics in Contemporary Literature and Culture II

Topic: Incarcerating Indigenous Peoples: Cultural and Political Perspectives

Description: This seminar will examine the concepts and reality of incarceration for Indigenous people in Canada and the role of writing. According to a 2016 investigative report by Maclean's magazine, the asymmetrical jailing of the Indigenous population in Canada now exceeds the jailing of African-Americans in the USA. In fact, there are now more Indigenous people incarcerated across the country than there were Blacks jailed at the height of the apartheid in South Africa. While statistics may surprise the majority of Canadians, incarceration for Indigenous peoples comes as no surprise and extends back to European contact. How is incarceration then connected to the history and colonization of Indigenous peoples, and what insight can literature give us into this experience? We will consider a variety of literary strategies that Indigenous authors have adopted to tell their stories of incarceration with the end goal of confronting and destroying colonialism; this focus will connect to related themes of diaspora, racism, violence, gender, self-determination, residential schools, etc. The texts for the seminar

include a variety of literary genres, such as memoir, fiction and poetry, as well as critical work that serves to open the literature to analysis.

Requirements: These include regular attendance and participation, an oral presentation, and a longer essay. Three term-hours; fall. A. G. Ruffo.

ENGL-867* Topics in Contemporary Literature and Culture III

Topic: Forging "Democratic Readers": Ideology and Identity in the Works of Philip Pullman

Description: With the publication in October 2017 of The Book of Dust Philip Pullman returned once more to the fantastic world of His Dark Materials. Visionary Romantic poet William Blake refers to writing as 'the wond'rous art': perhaps in deference to Blake's vital influence on his own work, contemporary British author Philip Pullman describes reading, its counterpart, as "a subtle art." Pullman's fascination with reading is evident in all aspects of his work: from the intertextual nod to his own wide-ranging literary experience given by the complex epigraphs scattered throughout his oeuvre, to representations of the interpretive act such as that figured in Lyra's ability to read the alethiometer in The Golden Compass, to the concept of a "democracy of reading" used by Pullman to articulate his sense of reading as an ideological act, the works of this award-winning author present reading from multiple perspectives to an audience ranging from neophytes to seasoned academics. Beginning from the premise that Pullman treats reading not as a simple means of accessing ideological content, but rather as a sophisticated ideological act, this course explores the function of narrative, genre and intertextuality in the works of Philip Pullman through examining their role in his award-winning trilogy, His Dark Materials (1995, 1997, 2000) and its associated short fiction Lyra's Oxford (2003) and Once Upon a Time in the North (2008), as well as in his works for younger readers: Spring-Heeled Jack (1989), Count Karlstein (1991,1998), The Firework-Maker's Daughter (1995), Clockwork (1996, 1998), I Was a Rat! (1999, 2000), The Scarecrow and His Servant (2004), the recent Tales from the Brothers Grimm (2012), and of course, The Book of Dust. Three term-hours; fall. S. King.

ENGL-868* Topics in Contemporary Literature and Culture IV
Not offered 2018-19.

ENGL-870 Studies in Canadian Literature
Not offered 2018-19.

ENGL-871* Topics in Canadian Literature I
Not offered 2018-19.

ENGL-872* Topics in Canadian Literature II
Not offered 2018-19.

ENGL-873* Topics in Canadian Literature III
Not offered 2018-19.

ENGL-874* Topics in Canadian Literature IV
Not offered 2018-19.

ENGL-875 Studies in Postcolonial Literatures
Not offered 2018-19.

ENGL-876* Topics in Postcolonial Literatures I
Not offered 2018-19.

ENGL-877* Topics in Postcolonial Literatures II
Not offered 2018-19.

ENGL-878* Topics in Postcolonial Literatures III
Not offered 2018-19.

ENGL-879* Topics in Postcolonial Literatures IV
Not offered 2018-19.

ENGL-880 Studies in American Literature
Not offered 2018-19.

ENGL-881* Topics in American Literature I
Not offered 2018-19.

ENGL-882* Topics in American Literature II
Not offered 2018-19.

ENGL-883* Topics in American Literature III
Not offered 2018-19.

ENGL-884* Topics in American Literature IV

Topic: Race, Sound and African American Literature

Description: This course focuses on the relationship between Sound Studies and African American literature. We will investigate various recourses to sound in African American literature and criticism. We will read the work of literary figures like Frederick Douglass, W.E.B. Du Bois, Zora Neale Hurston and Ann Petry alongside critics like Amiri Baraka, Daphne Brooks, Fred Moten, and Alexander Weheliye. Traversing the sonic color line, we will develop new understandings of black aesthetics, literature, and politics. Attendance and Participation 10%; one Presentation 10%; two Short Papers (3-5 pages) 20%; one Final Research Paper (20-25 pages) 60%. Three term-hours; fall. K. Moriah.

ENGL-890* Directed Cross-Disciplinary Research
This course is designed to allow M.A. students to undertake a program of graduate-level directed reading under the supervision of faculty in departments outside English Language and Literature. Permission of the external supervisor is required in advance of registration, and workload and evaluation for the course must be approved by the graduate coordinator in English to ensure consistency with English graduate course norms.

ENGL-892* Literary Internship
This course is a pass/fail credit course which offers MA students placements in research, literacy, language and arts-related community organizations, with the aim of providing those students with job experience that is directly related to literary studies. Sample placements may include such organizations as Kingston WritersFest, or the Strathy Language Unit at Queen's University. To achieve a pass in ENGL 892, the student shall submit to the Graduate Chair a time sheet (signed by his/her placement supervisor) stating that 50 hours of work have been completed satisfactorily, make a presentation to the department about the content of this work-study project; and hand in a brief written summary report (1200 words) on the experience to the Graduate Chair. M. Wallace.

ENGL-895* Directed Reading
Directed study under the guidance of a faculty member in an area of the instructor's expertise. Permission of instructor and graduate coordinator in English is required in advance of registration and is granted only under special circumstances. Workload and evaluation for the course must be approved by the graduate coordinator in English to ensure consistency with English graduate course norms. (Available only to students enrolled in the English MA program.)

ENGL-899 Master's Thesis Research

ENGL-900* Introduction to Professional and Pedagogical Skills II
This course is designed to acquaint doctoral students with some aspects of the teaching and scholarly skills and responsibilities of university faculty in order to prepare them for an academic career. In addition to practical training in essay marking, lecturing techniques and other teaching methods, the course will offer training in bibliographical and archival research, grant application, the academic job market, and other practical aspects of the professional study of literature. The course will consist of a number of seminars and workshops geared to the particular stage of the student's progress over three years in the program. This course is graded on a Pass/Fail basis. Three term-hours; fall. M. Wallace.

ENGL-903* Research Forum I
A regularly scheduled forum in which faculty, advanced doctoral students, and visiting scholars present model research problems and methodologies for discussion. Attendance is required. Graded on a Pass/Fail basis. Various speakers.

ENGL-950* Comparative Literature I
An introduction to comparative literary studies as currently practised, with particular emphasis on the relevance to such studies of contemporary theories of literature and criticism. This course will be given jointly with CLAS-850*, FRAN-950*. Not offered 2018-19.

ENGL-951* Comparative Literature II
Specialized study in a comparative context of particular authors, themes, movements, periods, genres, literary forms, or some combination of these elements. This course will be given jointly with CLAS-851*, FRAN-951*. Not offered 2018-19.

ENGL-990* Directed Cross-Disciplinary Research
This course is designed to allow doctoral students to undertake a program of graduate-level directed reading under the supervision of faculty in departments outside English Language and Literature. Permission of the external supervisor is required in advance of registration, and workload and evaluation for the course must be approved by the graduate coordinator in English to ensure consistency with English graduate course norms.

ENGL-995* Directed Reading
Directed study under the guidance of a faculty member in an area of the instructor's expertise. Permission of instructor and graduate coordinator in English is required in advance of registration and is granted only under special circumstances. Workload and evaluation for the course must be approved by the graduate coordinator in English to

ensure consistency with English graduate course norms. (Available only to students enrolled in the English PhD program.)

ENGL-999 Ph.D. Thesis Research

ENVIRONMENTAL STUDIES

ENSC-801* Methodological and Conceptual Basis for Environmental Studies
The course examines methodological and conceptual issues arising from Environmental Studies position as an inter-, multi- and/or trans-disciplinary practice. It will focus on the inherent difficulties in overcoming disciplinary fragmentation in approaches to studying complex issues in environmental sustainability that require integrated understandings of the inter-relations between social and natural systems. The course will promote methodological literacy beyond student's own area of expertise, develop critical and reflexive thinking about how environmental studies might approach issues of sustainability, and encourage and facilitate communication across disciplinary paradigms. The course precedes and compliments ENSC-802, familiarizing students with the historical origins, philosophical underpinnings and practical deployment of key approaches within the social and natural sciences and humanities. Three term-hours; Fall; H.Jamieson, M. (Mick) Smith.

Course fee(s): field trip fee of $50.00 (2018-2019).
Prerequisite: permission of instructor

ENSC-802* Global Environmental Problems: Issues in Sustainability
This course focuses on real-world environmental problems analyzing their social, ethical, and biogeochemical origins, economic ramifications, and institutional frameworks for their mitigation and resolution in the context of environmental sustainability. This course would logically follow or run concurrently with ENSC-801*, and will deepen and continue the themes through consideration of the intellectual history of theories and concepts relevant to environmental studies, with a focus on the concepts of “sustainability” and “sustainable development”. Three term-hours; Winter; M. Hird, S. Brown. Prerequisite: permission of instructor

ENSC-816* Environmental Chemicals
The course will compare and contrast the behaviour of persistent, bioaccumulative and toxic compounds, such as methyl mercury and chlorinated aromatic compounds, with the behaviour of less persistent chemicals such as petroleum hydrocarbons and modern pesticides. Subjects of interest may include sediment diagenesis, long-range transport, methylation processes, and interactions between biomagnification and ecosystem structure and productivity. Three term-hours; Fall or Winter. Not offered 2018-19.
Prerequisite: Permission of instructor

ENSC-840* Directed Studies
This course provides an opportunity for students to independently study a selected topic under the supervision of one of more faculty members. This may take the form of a reading course with an assigned paper, but other possible formats would be considered. For detailed information, consult course coordinator. Three term-hours: Fall, Winter, Summer. Course coordinator: M. Smith.
Prerequisite: permission of course coordinator

ENSC-841* Special Topics
This course focuses on specific topics related to the environment and sustainability. Special topics are offered under the guidance of a faculty member in an area of the instructor's expertise. For detailed information, consult the course instructor. Three term-hours: Fall, Winter or Summer. Course coordinator: M. Smith
Field trip fees may apply, normally less than $50.00
PREREQUISITE: permission of the instructor
EXCLUSION: varies depending on instructor

ENSC-842* Special Topics
This course focuses on specific topics related to the environment and sustainability. Special topics are offered under the guidance of a faculty member in an area of the instructor's expertise. For detailed information, consult the course instructor. Three term-hours: Fall, Winter or Summer. Course coordinator: M. Smith.
Field trip fees may apply, normally less than $50.00
PREREQUISITE: permission of the instructor
EXCLUSION: varies depending on instructor

ENSC-897* Seminar in Environmental Studies
This half-credit course spans four semesters and requires students to attend a minimum of 30 seminars, chosen from among those offered by the School of Environmental Studies (at least 18) and other units in any faculty at Queen's. Within the School's annual seminar series, they must also recruit and host one seminar speaker and present one seminar on their own project. Total contact hours: 30 hours, up to 4-5 semesters; Fall, Winter, Summer. Course coordinator: To be determined. Offered 2018-19.
Prerequisite: permission of course coordinator

ENSC-898 Master's Project (Course-based)

ENSC-899 Master's Thesis

ENSC-999 Ph.D. Thesis Research

FRENCH STUDIES

Les demi-cours (3.0 crédits) sont indiqués par un astérisque. Deux demi-cours constituent 6.0 crédits. Tous les cours qui figurent dans l'annuaire ne sont pas nécessairement donnés tous les ans. Pour se renseigner au sujet des cours offerts chaque année, l'étudiant devra consulter la Directrice des études de 2e et de 3e cycles. L'étudiant(e) de doctorat qui veut faire un demi-cours de recherches dirigées (voir cours FRAN-996*, FRAN-997*) doit obtenir l'approbation préalable du Comité des études de 2e et de 3e cycles du Département.

FRAN-800* Bibliographie, outils et méthodes de recherche
Cours d'introduction aux méthodes bibliographiques et aux méthodes de recherche: textologie, rédaction d'articles, etc. Hiver, trois heures/semaine. Corps enseignant.

FRAN-801* Reading and Translation French Course for Graduate Students
The objective of this course is to develop students' reading skills in French so that they can fulfill language requirements for graduate work and successfully pursue their professional research interests. Although the course will involve some review of vocabulary (idioms, nuances and subtleties) and grammar, its primary focus will be on comprehension of a wide variety of texts in French through translation and group exercises. This is a non-credit course, graded on a Pass/Fail basis. Summer, trois heures/semaine.

COURS DE LINGUISTIQUE

FRAN-803* Acquisition d'une langue seconde
Ce cours portera sur les différents facteurs impliqués dans l'acquisition d'une langue seconde (ALS). La première partie du cours portera sur les différents modèles théoriques proposés pour rendre compte de l'ALS, ainsi que sur les différences entre l'acquisition d'une L1 et l'acquisition d'une L2. Dans un deuxième temps, nous nous pencherons sur le rôle des différences individuelles chez les apprenants (telles l'âge, l'aptitude, la personnalité, le style cognitif, la motivation, l'attitude et les stratégies d'apprentissage). Dans la troisième partie du cours, nous nous intéresserons plus particulièrement aux caractéristiques de l'interlangue (le système linguistique développé par les apprenants). Finalement, nous discuterons des différences existant entre l'apprentissage d'une L2 en milieu naturel et l'apprentissage en salle de classe.

FRAN-807* Le français canadien
Analyse détaillée des principales caractéristiques phonétiques, lexicales et syntaxiques

du français canadien et réflexion théorique sur le fonctionnement des systèmes linguistiques.

FRAN-811* La sémantique
Introduction critique aux concepts et méthodes de la sémantique structurale et générative.

FRAN-813* Histoire du français et théorie du changement linguistique
Théorie du changement linguistique vue à travers l'histoire de la langue française.

FRAN-815* Théories du langage
Présentation des différents courants qui ont margué la linquistique depuis la Grammaire de Port-Royal, y compris les néo-grammairiens, le structuralisme, le béhaviorisme, le cognitivisme, le générativisme et les modèles variationnistes.

FRAN-817* L'analyse informatisée des textes
Principes de la pensée algorithmique, possibilités et limites des outils informatiques pour l'analyse textuelle; conséquences de la diversité des structures textuelles pour l'analyse informatisée; interface entre modèles linguistiques, littéraires et informatiques. N'exige pas de formation en informatique. Travaux pratiques.

FRAN-823* Thèmes en théorie morphosyntaxique
Ce séminaire porte sur l'analyse de problèmes de pointe en morphosyntaxe et sera l'occasion de présenter et d'évaluer des théories récentes en grammaire générative. En plus de permettre aux étudiants d'approfondir leurs connaissances en théorie morphosyntaxique, ce séminaire abordera un thème particulier situé à l'interface entre la morphologie et la syntaxe . Le focus du cours pourra varier selon les années en fonction des intérêts de l'instructeur et des étudiants. Le séminaire s'adresse aux étudiants ayant déjà une formation avancée en linguistique théorique.
EXCLUSION:LING-435

COURS DE LITTÉRATURE FRANÇAISE

FRAN-825* Pierre de Ronsard (1524-1585)
Étude de la variété de l'écriture poétique de Ronsard à travers tous les genres abordés par le poète (l'ode, le sonnet, l'hymne, le discours, l'églogue, l'élégie, le " poëme ", et l'épopée).

FRAN-828* La littérature de voyage en France (XVIe - XXe siècle)
Étude du récit de voyage français à partir de ses structures et des relations qui se tissent entre le texte, le contexte socio-historique, l'auteur et le lecteur.

FRAN-829* Mysticisme et académisme. Etude des discours mystiques du 17e siècle à travers divers genres
L'objectif principal de ce cours est d'étudier les divers discours mystiques qui parcourent le 17e siècle afin de montrer comment et sous quelle forme ils participent aux tensions -cœur, raison- qui traversent ce siècle. Seront examinés, entre autres, Pascal, Fénelon, Madame de Guyon.

FRAN-835* Le roman français au XVIIIe siècle
Étude du roman français des lumières à travers les oeuvres les plus significatives et les études théoriques. Dans un contexte historique, social et littéraire, analyse des principales tendances qui font de lui un genre en devenir.

FRAN-836* Denis Diderot
À travers les textes de D. Diderot, étude des principales tendances esthétiques et philosophiques du siècle des lumières.

FRAN-837* Théories de la féminité dans la littérature française d'avant 1800
À partir d'un corpus varié de textes (philosophie, roman, théâtre, poésie) parus en France entre le Moyen Âge et le XVIIIe siècle, ce cours s'attachera à l'étude des écrits masculins et féminins qui préparent les grands thèmes de la réflexion actuelle sur l'identité féminine.

FRAN-849* Lectures zoliennes
Introduction à la série des Rougon-Macquart d'Émile Zola par le biais de l'esthétique du naturalisme et de l'impressionnisme, par l'étude de configurations spatiales et de structures narratives, et par l'examen de l'implication sociale zolienne.

FRAN-850* L'écriture comme compromis
Ce cours propose d'aborder l'œuvre d'un auteur du XIXe ou XXe siècle (Colette, Duras, Flaubert, Proust, Sand, Yourcenar) chez qui l'écriture constitue une quête subjective, solitaire et nécessaire, laquelle, en s'effectuant, se retrouve devant le constat d'être condamnée à une certaine forme de compromis. Il s'agira tout d'abord de situer l'œuvre par rapport aux tendances et aux préoccupations littéraires de l'époque afin d'examiner en quoi elle constitue un parcours singulier qui lui est propre. Il s'agira par la suite d'explorer la nature particulière du compromis (idéologique, formel…) auquel l'œuvre en question doit se résigner, dans la mesure où en tant que quête elle serait condamnée à l'inaboutissement.

FRAN-851* Le texte parlé
Les romans de Louis-Ferdinand Céline et de Samuel Beckett dans leur rapport à la langue orale et /ou à la langue-mère.

FRAN-861* Théâtre et identité
Étude de pièces puisées dans le répertoire des dramaturgies française et québécoise du XXe siècle (Beckett, Cocteau, Gauvreau, Genet, Ionesco, Pinget, Sarraute, Sartre, Tremblay) qui tournent autour de la question de l'identité.

FRAN-870* Diasporas francophones : Les Antilles et l'Afrique
Ce cours présente les théories les plus récentes concernant les relations entre l'Afrique et sa Diaspora, ainsi que les auteurs les plus représentatifs des littératures de ces régions. A partir des théories telles celle de Deleuze (Répétition et Différence, Rhizomes) de Glissant (Poétique de la relation, Traité du Tout-monde), ou de Paul Gilroy (The Black Atlantic), nous allons avancer nos propres théories pour expliquer les rapports dynamiques entre ces cultures. Les œuvres d'auteurs tels que Maryse Condé, Simone Schwarz-Bart, Alain Mabanckou, Tierno Monenembo et Henri Lopès seront au programme.

FRAN-871* Mémoire et subjectivité dans le roman francophone
Ce cours se propose une relecture du roman d'Afrique francophone subsaharienne à la lumière de la théorie de l'oppositionnalité (Lyotard, De Certeau, Chambers). Le but sera de dégager les mécanismes d'écriture dans la langue de l'autre et dans un contexte doublement marginal.

FRAN-883* Études canadiennes-françaises: le Roman I
Étude des oeuvres marquantes du roman canadien-français des origines à la révolution tranquille.

FRAN-884* Études canadiennes-françaises: la Poésie.

FRAN-885* Études canadiennes-françaises: le Roman II
Étude des tendances récentes et des oeuvres représentatives du roman québécois contemporain.

FRAN-886* Études canadiennes-françaises: le Théâtre
L'activité des animateurs, la constitution du public, l'émergence du répertoire québécois (étude de pièces représentatives).

FRAN-887* L'Écriture des femmes du Québec
Étude des diverses manifestations de l'écriture contemporaine des femmes du Québec

tant dans le domaine de la fiction que de la théorie. Seront donc analysés des textes de création (roman, poésie, nouvelles) et des essais de réflexion critique (réception, généricité, spécificité de l'écriture au féminin).

FRAN-888* Roman québécois et histoire
Ce séminaire sera consacré à la question de l'histoire dans le roman québécois. Il s'agira de réfléchir sur la présence de l'histoire en tant que thème privilégié, mais aussi en tant que structure temporelle particulière au roman québécois, à son historicité.

COURS DE PROFESSEURS INVITÉS

FRAN-890* Études littéraires I
Le contenu de ce cours, basé en général sur l'étude d'un genre à une époque donnée, dépendra des intérêts et de la recherche récente de l'instructeur.

FRAN-891* Études littéraires II
Le contenu de ce cours, basé en général sur l'étude des oeuvres d'un auteur spécifique, dépendra des intérêts et de la recherche récente de l'nstructeur.

FRAN-892* Études linguistiques I
Le contenu de ce cours, basé en général sur l'analyse critique ou comparative d'une théorie ou d'un ensemble de théories, dépendra des intérêts et de la recherche récente de l'instructeur.

FRAN-893* Études linguistiques II
Le contenu de ce cours, basé en général sur l'analyse détaillée d'un ensemble important de données ou sur un problème théorique particulier, dépendra des intérêts et de la recherche récente de l'instructeur.

COURS DE THÉORIE LITTÉRAIRE

FRAN-902* L'Autobiographie
Questionnement (et histoire) des théories de l'autobiographie dans le contexte de la lecture de l'oeuvre de Louis-Ferdinand Céline.

FRAN-912* Du témoignage aux mémoires
Élaboration littéraire et historique d'une poétique du témoignage à partir de l'étude critique de philosophes.

FRAN-913* Littérature et linguistique I
Ce cours veut explorer les différentes possibilités qu'offre la linguistique pour l'étude

du texte littéraire. Tant la recherche que l'enseignement seront interdisciplinaires, c'est-à -dire assurés par un(e) linguiste et un(e) littéraire.

FRAN-914* Littérature et linguistique II
Ce cours veut explorer les différentes possibilités qu'offre la linguistique pour l'étude du texte littéraire. Tant la recherche que l'enseignement seront interdisciplinaires, c'est-à -dire assurés par un(e) linguiste et un(e) littéraire.

FRAN-915* Histoire du livre (XVIe-XXe siècles)
Étude du livre en France depuis l'apparition de l'imprimerie jusqu'au développement du support numérique. Étude de la production technique, des métiers de promotion et de diffusion, des agents de la réception du livre.

FRAN-916* L'institution littéraire
Présentation critique des principales théories et pratiques relatives à l'institution littéraire et à son interaction avec le texte littéraire, tant au niveau de la production que de la réception.

FRAN-917* L'irreprésentable dans la littérature aux XIXe et XXe siècles
Ce cours propose d'explorer les limites de la représentation dans différentes œuvres romanesques, picturales, photographiques et cinématographiques des XIXe et XXe siècles, là où il s'agit d'événements ou de questions relevant a priori de l'ordre de l'irreprésentable tels la mort, l'amour, la maladie, le passé, l'interdit, l'indicible, le traumatisme individuel ou collectif…. Les étudiants auront à considérer et à évaluer les différents enjeux qui entrent en ligne de compte, tant sur le plan de la création que sur celui de la réception, à savoir, entre autres, le rôle de la responsabilité, dans le contexte de l'art et de la représentation, lorsqu'il s'agit d'aborder ce genre de questions. Sur le plan théorique, nous aurons entre autres recours à la pensée de Walter Benjamin.

FRAN-920* La représentation de l'oralité dans les littératures de l'Afrique et des Antilles
Un survol des théories portant sur la question de la représentation de l'oralité dans les littératures africaines et antillaises. Les théoriciens pris en compte incluent Barthes, Benjamin, Chamoiseau, Glissant, Koné, Kristeva, Lacan, Le Goff et Zumthor. Le corpus de textes étudiés dans le passé inclut des oeuvres par Alexis, Diabaté, Schwarz-Barth, Sembène et Werewere Liking.

FRAN-950* Littérature comparée I
Introduction aux études de littérature comparée, telles qu'elles sont pratiquées actuellement. L'accent sera mis sur les rapports entre ces études et les théories littéraires

contemporaines. Ce cours sera donné conjointement avec CLAS-850*, ENGL-950*, GRMN-902*.

FRAN-951* Littérature comparée II
Étude spécialisée dans un contexte comparatif d'auteurs, de thèmes, de mouvements, de périodes, de genres, de formes littéraires, ou d'un ensemble de ces éléments. Ce cours sera donné conjointement avec CLAS-851*, ENGL-951*.

COURS DE LECTURES DIRIGÉES

FRAN-996* Cours de lectures dirigées
Programme de lectures dirigées établi en fonction des besoins de l'étudiant(e) après consultation avec la Directrice des études de 2e et 3e cycles.

FRAN-997* Cours de lectures dirigées
Programme de lectures dirigées établi en fonction des besoins de l'étudiant(e) après consultation avec la Directrice des études de 2e et 3e cycles. Ce cours est limité aux étudiants de maîtrise (programme I et II) et aux étudiants de doctorat.

THÈSES

FRAN-899 Recherches dirigées et rédaction de thèse de maîtrise

FRAN-999 Recherches dirigées et rédaction de thèse de doctorat

GENDER STUDIES

GNDS-801* Theories in Gender Studies
This interdisciplinary seminar provides a comprehensive overview of contemporary theories in gender studies and in such fields as critical race, feminist, women's, queer or trans studies. Students examine the development and application of theories as well as debates surrounding them. Course materials draw from theories in the social sciences and the humanities. Required of GNDS graduate students.

GNDS-802* Methodologies in Gender Studies
This interdisciplinary seminar examines methodologies in gender studies and in such fields as critical race, feminist, women's, queer or trans studies. Course materials connect multiple academic disciplines and local-global perspectives. Students examine anti-oppressive politics of knowledge production and the uses of knowledge in processes of social change. Required of GNDS graduate students.

GNDS-810* Topics in Gendered Social and Physical Environments
Students consider the intersections of social (including political, economic, and cultural) and physical environments with gendered experiences, analyses and activisms. The offering of the course depends upon faculty availability. Three term-hours; Fall. S. Morgensen

GNDS-815 Proseminar
Course provides professional training to Gender Studies graduate students and invests students in the public intellectual life of the department and the field. Required activities include: attendance at talks and symposia by visiting scholars; participation in workshops on teaching, grant writing, research, publishing, and careers; and involvement in planning or organizing intellectual activities within the departmental community. Graded Pass/Fail.

GNDS-820* Special Topics in Gender Studies I
Seminars focus on specific topics related to gender studies under the guidance of a faculty member in an area of the instructor's expertise. The offering of the course depends upon faculty availability.

GNDS-821* Special Topics in Gender Studies II
Seminars focus on specific topics related to gender studies under the guidance of faculty member in an area of the instructor's expertise. The offering of the course depends upon faculty availability.

GNDS-840* Gender Studies Directed Reading I
In consultation with the Graduate Co-ordinator, MA candidates may enrol in a Gender Studies Directed Reading course. This is an intensive theory and reading course for individual MA candidates researching areas not offered in required and elective seminars. Students arrange their assignments with individual faculty.

GNDS-841* Gender Studies Directed Reading II
In consultation with the Graduate Co-ordinator, MA candidates may enrol in a Gender Studies Directed Reading course.This is an intensive theory and reading course for individual MA candidates researching areas not offered in required and elective seminars. Students arrange their assignments with individual faculty.

GNDS-842* Directed Reading
Under the supervision of an individual faculty member, MA students may conduct intensive reading in a research area not offered in core or elective courses. Readings are to be arranged in consultation with the faculty supervisor, and accompanied by meetings during the term to discuss reading and submission of written assignments. (This course will be offered when faculty resources are available.)

GNDS-843* Directed Reading
Under the supervision of an individual faculty member, MA students may conduct intensive reading in a research area not offered in core or elective courses. Readings are to be arranged in consultation with the faculty supervisor, and accompanied by meetings during the term to discuss reading and submission of written assignments. (This course will be offered when faculty resources are available.)

GNDS-850* Practicum: Engaging Feminist Activisms
This seminar addresses contemporary issues in activism, research, and methodologies, with a specific focus on local community work. In addition to critically analysing interdisciplinary and feminist approaches to activist work, students working with a local organization may integrate this into their MA thesis with approval of their supervisor.The offering of the course depends upon faculty availability. A GNDS faculty member will oversee each placement. Equal to other one-term course offerings, the internships run 5 hours/week over 12 weeks; Winter.

GNDS-898* Major Research Paper

GNDS-899 Master's Thesis
An intensive and required written project based on student’s own research questions. Consists of a number of chapters which form a single coherent work.

PREREQUISITE: GNDS-801*, GNDS-802*; two Gender Studies elective courses or courses from cognate graduate programs (e.g Cultural Studies, Global Development Studies, Sociology, Geography, English) or permission of the Gender Studies Graduate Coordinator.

GNDS-903* Applications of Gender Studies
Examines critical theories of applications of gender studies research in work for social change, on such themes as power in research and representation, researcher responsibilities, academic and nonacademic research, research careers, and community-based research. Students plan applications of original research, and evaluate plans by utilizing critical theories of application.

GNDS-940* Directed Reading
Under the supervisions of an individual faculty member, PhD students may conduct intensive reading in a research area not offered in core or elective courses. Readings are arranged in consultation with the faculty supervisor, and accompanied by meetings during the term to discuss reading and submission of written assignments.This course will be offered only when faculty resources are available.

GNDS-941* Directed Reading
Under the supervisions of an individual faculty member, PhD students may conduct intensive reading in a research area not offered in core or elective courses. Readings are arranged in consultation with the faculty supervisor, and accompanied by meetings during the term to discuss reading and submission of written assignments. This course will be offered only when faculty resources are available.

GNDS-950* PhD Practicum
Students and supervisors design a course of research with partners at a site of application of the doctoral research project. Students examine scholarship on practica and research applications that are relevant to the research topic and site, and develop new knowledge in collaboration with research partners. The practicum design must align with the program degree learning expectations.

GNDS-999 Ph.D. Thesis Research

GEOENGINEERING

GENG-840 GeoEngineering Seminar
Illustrate all areas of GeoEngineering research and practice; emphasis on breadth and interdisciplinary aspects; preparation, delivery and audience participation in oral presentations; the course links students from departments participating in the Collaborative Graduate Program in GeoEngineering; opportunities are provided to develop and refine presentation skills, to give and receive constructive criticism, and to pose and respond to questions. Instructors: GeoEngineering faculty, Invited lecturers.

GENG-842* Special Topics in Geoengineering II
A course unit will be composed of two modules on various topics in GeoEngineering and Applied Geoscience. Each module will consist of a workshop or short course as approved by the GeoEngineering Graduate Coordinator. The unit will be completed within two years. Specific modules to be available during each academic year will be announced in September or, in exceptional circumstances, as opportunities arise. I.D. Moore Term: F, W, S as modules are available.

GENG-843* Special Topics in Geoengineering III
Current topics of interest to geoengineering students, as well as other engineering and nonengineering students, will be presented. Fall, Winter, Summer (when lecture is available). Faculty and visiting instructors (managed by I.D. Moore, GeoEngineering Graduate Coordinator)

GENG-844 GeoEngineering Short Course- I
The course will be a one or two day short course on various topics in GeoEngineering and Applied Geoscience, as approved by the GeoEngineering Graduate Coordinator. Specific short courses will be available during each academic year as announced in September or as opportunities arise. (1.5 credit units)

GENG-845 GeoEngineering Short Course- II
The course will be a one or two day short course on various topics in GeoEngineering and Applied Geoscience, as approved by the GeoEngineering Graduate Coordinator. Specific short courses will be available during each academic year as announced in September or as opportunities arise. (1.5 credit units)

GEOGRAPHY AND PLANNING

NOTE: All courses offered in the Department of Geography and Planning, except GPHY-801 and GPHY-857 are of one term in length (3.0 credit units). GPHY-801 and GPHY-857 are 3.0 credit unit courses that run through both Fall and Winter terms. The Department of Geography and Planning usually offers approximately 10 courses in any one academic year. Detailed lists are printed for graduate students by the Department in June of each year for the following academic year.

GPHY-801* Conceptual and Methodological Basis of Geography
A discussion of the major concepts, methodology, and research traditions of geography and the relationship of the discipline to the theory and methods of the natural sciences and of the social sciences. Full year course, 3.0 credit units. P.Treitz.

GPHY-818* Seminar Course in Landscape Ecology
Landscape ecology emphasizes the interaction between spatial pattern and ecological processes. This seminar course will examine the theory and practice of landscape ecology, and explore how composition and spatial patterning of landscapes affects ecological processes. Topics include: theoretical aspects of scaling, methods of quantifying landscape structure, and the effects of landscape structure and temporal dynamics on ecosystem functions such as succession, movement of biota, and fluxes of nutrients, energy, and trace gases all in the context of Earth System Science. Three term-hours. Not offered 2018-19.

GPHY-819* Systems Modelling
Research in Geography and Planning, and many other disciplines, often involves measuring and understanding the complex interaction of a variety of processes in both natural (e.g. a forest) and human-dominated (e.g. a city) systems. This course provides students with the skills and tools necessary to develop, analyze, and test simulation models of complex systems containing multiple interacting processes. These models are useful for synthesizing information, testing hypotheses, and guiding the development of research questions and policy. Three term-hours; Fall. N. Scott.

GPHY-823* Environmental Biogeochemistry
This course explores the impact of climatic change and anthropogenic activities on biogeochemical processes. Emphasis is placed on understanding how the resulting changes in atmospheric chemistry, the cryosphere, landuse, geomorphology, and hydrological processes alter the biogeochemical cycling of Carbon, Nitrogen, and

Sulphur, and selected contaminants in terrestrial and aquatic systems. Three term-hours; Winter. M. Lafrenière

GPHY-824* Processes in Northern Regions
An advanced investigation of the current state of knowledge of processes related to the physical environment in northern settings, with the emphasis on permafrost, water and landscape interactions. Themes will include: climate and permafrost dynamics, periglacial geomorphology, hydrology, limnology. Three term-hours. Not offered 2018-19.

GPHY-836* Qualitative Research Methods
Qualitative research seeks to understand how and why people perceive and interact with the world around them. This course introduces graduate students to the nature and scope of qualitative research methods with respect to data collection and analyses in the social and health sciences, giving them theoretical and practical foundations to build on. Three term-hours; Winter. H. Castleden. Offered jointly with EPID-836*. EXCLUSION: EPID-836*

GPHY-842* Remote Sensing of Environment
This course examines methods and techniques for collecting, processing and analysing remote sensing data. An emphasis will be placed on how these methods are applied to address earth and environmental issues across a range of spatial scales. Special emphasis will be placed on airborne (including UAVs) and satellite sensors operating in the visible, infrared and microwave regions of the spectrum. Three term hours. Not offered 2018-19.

GPHY-845* Spatial Data Measurement and Collection
This course examines the application of one or more geomatics techniques to problems in earth measurement. Topics may include Total Station Surveying, Satellite Positioning, Aerial Photography, Photogrammetry, LiDAR, methods of field data collection, and deformation monitoring. Specific applications may be drawn from fields such as archaeology, architecture, geomorphology, and regional mapping. Three term-hours. Not offered 2018-19.

GPHY-849* Seminar in Geographic Information Science
The goal of this course is to provide an in-depth discussion on topics related to geographic information science and explore innovative GIS applications. Topics may include some, or all of the following: (i) GIS database models and structures, design, and implementation, (ii) data visualization, generalization, and representation, (iii) data

mining, (iv) cognition, (v) spatial analysis, (vi) internet mapping, (vii) uncertainty and error analysis, and (viii) societal issues. Three term-hours. Not offered 2018-19.

GPHY-854* Approaches to Data in Geographic Enquiry
A survey and assessment of the methods of acquisition, editing, management, organization, retrieval and display of different types of data used in research in geography. Emphasis on data organization and management in both mainframe and microcomputing environments. Three term-hours. Not offered 2018-19.

GPHY-855* Spatial Analysis
A review of descriptive and inferential statistics and quantitative methods appropriate for the description and analysis of spatial distribution and processes. Topics include point pattern analysis, measures of spatial association, classification, analysis of spatial and temporal data series and simulation methods in spatial analysis. Applications will focus on population and diffusion processes. Three term-hours; Winter. D. Chen.

GPHY-857* Geography Research Seminar
This is a seminar course required of all graduate students in the M.A. and M.Sc. programs in geography, in addition to their standard course load.The objective of this course is to introduce Master's students to a range of research approaches in the discipline of geography. The course also provides an opportunity for professional development and for the development of a Master's thesis proposal. Full year, 3.0 credit units, Pass/Fail. B. Donald.

GPHY-866* Gender and Globalization
Examination of the ways that political, economic, cultural globalizing processes disrupt and transform existing social constructions of gender difference and patterns of gender inequality. Three term-hours; Winter. B. Mullings.

GPHY-868* Geographical Research and Philosophies of Place and Space
This course explores the meaning of two of Geography's most fundamental concepts: place and space. Recent scholarship in both philosophy (Jeff Malpas) and the history of science (Edward Casey) has explored the meaning of both place and space. But there is an older literature in Geography around these questions (Tuan, Relph, Entrikin, Sack, Massey, Porteous and Smith, etc.), in addition to a significant literature outside Geography (Eliade, Lefebvre, de Certeau, Foucault, Heidegger, and Bachelard). This course will look at these theoretical approaches to place and space, consider their implications for research, and will also trace how geographers and other social scientists and artists have incorporated a critical approach to place and space into their work. Three term-hours. Not offered 2018-19.

GPHY-869* Geographies of Health, Gender, Embodiment and Emotion
This course critically examines constructions of health, gender, embodiment and emotion. Students will investigate the impact of, and intersections between these key concepts at various geographical and experiential scales (e.g. individual/family/community/society). Three term-hours. Not offered 2018-19.

GPHY-870* Historical and Cultural Issues in Fieldwork
This course explores the histories and cultural meanings of fieldwork. Geographical fieldwork is considered historically along with conceptions of the "field" in allied disciplines such as ecology and anthropology. Constructions of the "field" are addressed in terms of empire, nationalism, pedagogy, the lab-field border, and in relations to its role as a gendered and affective space of knowledge and activity. Three term-hours; Fall. L. Cameron.

GPHY-874* Seminar in Cultural Geography
A lecture and seminar course in which developments in the field of cultural geography are examined, assessed and placed in a disciplinary and interdisciplinary context. Three term-hours. Not offered 2018-19.

GPHY-875* Seminar in Historical Geography
A lecture and seminar course in which developments in the field of historical geography are examined, assessed and placed in a disciplinary and interdisciplinary context. Three term-hours. Not offered 2018-19.

GPHY-880* The Geography of Energy
Historical, current and projected distribution of energy production and use in Canada.Topics include the development of our total primary energy supply, the rise of renewable energy sources, and future options for the development of Canada's energy resources, as linked to our societal needs. Three term-hours; Winter. W. Mabee.

GPHY-882* The Political Geography of City Regions
An examination of the importance of city regions as fundamental spatial units in the global economy and as important political actors. The processes of worldwide economic integration and accelerated urban growth have led to new urban challenges and new ways of thinking about city-region governance. Key concepts include: the re-scaling of political economy, the role of the state, economic competitiveness, innovation and governance reforms, intercity networks, global cities, new regional policies and politics, rising inequality, social diversity, power, local democracy and citizenship. While international in scope, the primary focus will be on city-regions in North America. Three term-hours. Not offered 2018-19.

GPHY-886* The Political Economy of Urbanization
The focus of the course will be on themes and debates regarding Marxist analysis of land, housing and residential structure in capitalist societies. Three term-hours. Not offered 2018-19.

GPHY-887* The Geography of Health and Health Care
In a seminar format, selected themes in the geography of health and health care are examined. Epidemiological and social theories, analytic methods, and planning and policy implications of health and health care are emphasized. Three term-hours; Winter. M. Rosenberg.

GPHY-889* The Geography of Citizenship
An examination of recent changes in the Canadian population and the social/spatial negotiation of citizenship. As Canadian society becomes more diverse, new concepts of citizenship and new developments in human rights provision counter historic forms of oppression ('race', class, gender), to result in changes that are mediated by public policy initiatives, citizenship movements, and the reorganization of capital. Key concepts: citizenship, multiculturalism, migration, racialization, gender, transnationalism, globalization, democracy. Three term-hours. Not offered 2018-19.

GPHY-890* Advanced Studies in Earth System Science I
Selected specialized topics in earth system science. Normally, this course will take the form of a reading course in the area of the instructor's expertise. Three term-hours.

GPHY-891* Advanced Studies in Earth System Science II
Selected specialized topics in earth system science. Normally, this course will take the form of a reading course in the area of the instructor's expertise. Three term-hours.

GPHY-893* Advanced Studies in Human Geography I
Selected topics in various fields of human geography. This may be held as a seminar or a reading course in the area of the instructor's expertise. Three term-hours; Fall. A. Kobayashi.

GPHY-894* Advanced Studies in Human Geography II
Selected topics in various fields of human geography. This may be held as a seminar or a reading course in the area of the instructor's expertise. Three term-hours.

GPHY-899 Master's Thesis Research

GPHY-999 Ph.D. Thesis Research

GEOLOGICAL SCIENCES AND GEOLOGICAL ENGINEERING

Some of the courses listed below are offered each year, some are offered either in alternating years, or on demand, and depend partly on student enrolment. Please check the Departmental website for further information. The cost of field trips, including transportation, accommodation and food (when it is supplied), will be borne by the student. Subsidies will be provided by the Department when funding permits. A list of the estimated field trip fees for each course is provided on the departmental web page. These fees are subject to change, and will be finalized by June 1 each year. Field trip fees will be payable by the due dates listed in the table.

APSC- 896* Engineering Leadership and Innovation
This course is designed to develop a range of skills essential for engineering professional practice in both the public and private sectors. The course will focus on; Engineering Leadership and Innovation including its application in project management. The course content will be presented through lectures, case studies, panel discussions and an interactive serious game.

GEOL-800* Foundations of Geosciences
The course will consist of three, seminar-based sections, each worth 1/3 of 1.5 credit units: (1) Principles of scientific methodology in the Geosciences: will provide an overview of the scientific method and tools for effective scientific communication. Professional practice and ethical aspects will also be discussed. (2) Mathematical methods for Geosciences: will provide a foundation in numerical methods and mathematical analysis. Topics include spatial statistics, probability, linear regression, and an introduction to numerical modeling techniques. (3) Experimental/Analytical Techniques in Geosciences: will provide an overview of analytical techniques and equipment available to geoscientists. Intended as an introduction to more advanced "methods" modules, this last section will provide a fundamental knowledge of the theory and operation of instruments and techniques available to members of our department. Staff.

GEOL-802* Graduate Field School
Graduate field school held in several regions of the world consisting of field trips to selected areas of geological interest, emphasizing relationships between local and regional geological environments and their natural resources and hazards, in the context of the tectonic evolution of the area visited. Students are expected to research background on areas to be visited and must produce one or more substantial reports and present one or more seminars. Extra fees may apply to cover the cost of travel. Field

excursions in the fall, winter and/or beginning of summer term. Field trip costs will be finalized by September, when the detailed trip plan is presented to interested students. In previous years, the maximum cost of the trip has been $3000 / student. Funding from thesis supervisors may be available to help offset these costs. Staff.

GEOL-803 Basin Analysis and Economics Deposits
A review of the tectonic origin and filling of various types of sedimentary basins, followed by an examination of the diagenesis of siliciclastic, carbonate and organic sediments, and the implications for the occurrence of hydrocarbons and mineral deposits. (1.5 credit units). PREREQUISITE: GEOL 238* or equivalent; GEOL 365* or equivalent

GEOL-804 Focused Topics in Geological Engineering
This course consists of a short and focused exploration of a pre-approved topic in engineering geology removed from the thesis research. The course may be hosted at Queen's or offsite under the co-supervision of the designated departmental instructor. Course delivery may vary from special lecture series to supervised field/lab course.Deliverables would include a self-directed report and presentation. Field trip fee may apply. (1.5 credit units). PREREQUISITE: Permission of the instructor.

GEOL-805 Focused Topics in Applied Geology
This course consists of a short and focused exploration of a pre-approved topic in applied geology removed from the thesis research.The course may be hosted at Queen's or offsite under the co-supervision of the designated departmental instructor. Course delivery may vary from special lecture series to supervised field/lab course.Deliverables would include a self-directed report and presentation. Field trip fee may apply. (1.5 credit units) PREREQUISITE: Permission of the instructor.

GEOL-806 Applications of Scanning Electron Microscopy and Microprobe Analysis
The theory and practical aspects of the techniques of Scanning Electron Microscopy and the Electron microprobe. A project is required where the student employs these techniques to study a material of their choice. (1.5 credit units) PREREQUISITE: Permission of the instructor.
EXCLUSION: GEOL 452

GEOL-807 Applications of X-ray Powder Diffraction and Mineral Spectroscopy
The theory and practical aspects of the techniques of X-ray powder diffraction and mineral spectroscopy. Techniques include Vis-infra-red spectroscopy, Raman spectroscopy and Mossbauer spectroscopy. A project is required where the student

employs these techniques to study a material of their choice. (1.5 credit units)
PREREQUISITE: Permission of the instructor.
EXCLUSION: GEOL 452

GEOL-808 Visualization in the Geosciences
An introduction to 3d visualization of natural sciences data with a focus on methods relevant to geological engineering, mineral exploration, and geoscience research. Perception, representation, and analytical methods. Design tools and data integration methods. Temporal analysis of natural sciences data. LiDAR data analysis. Global and local models. Virtual worlds. (1.5 credit units) PREREQUISITE: GEOL/GEOE 463 or GEOL 855 or Permission of the instructor

GEOL-809 Mine Waste Geochemistry
This course will expose students to the concepts and the current practice of mine waste management including acid mine drainage, neutral-pH metal leaching, secondary mineral precipitates, prediction and permitting, site remediation, etc. Those who complete this course will have a comprehensive understanding of the nature of mining environmental impact, the scientific principles behind the interaction between mine waste and the surface environment, and the tools (including speciation software) that professionals use to predict, control, remediate and regulate metal mining activities. (1.5 credit units) PREREQUISITE: Permission of the instructor.
EXCLUSION: GEOL-835

GEOL-810 Microtectonics and orogenic systems
Mechanisms of brittle and ductile deformation, strain, rheology, and deformation mechanisms applied to geological structures and rock fabrics, with an emphasis on microstructural development of fabrics, flow paths and vorticity analysis. Applications to problems in continental tectonics studies.(1.5 credit units) PREREQUISITE : Permission of the instructor.
EXCLUSION: GEOL 481, GEOL-816.

GEOL-811 Introduction to GIScience
An overview of the major themes, approaches, and methods of geographic information science and related GIS software tools. Spatial analysis, fundamentals of cartography, and fundamentals of data management. Students will gain exposure at a level appropriate for effectively managing and using spatial data for graduate level projects.(1.5 credit units) PREREQUISITE : Permission of the instructor.
EXCLUSION: GEOL 463, GPHY 243

GEOL-812 Resources and Sustainability
This course addresses the major challenges of mineral exploration and mining industries in providing well-being for people and ecosystems; includes discussions of the global distribution of, and demand for, water, energy and mineral resources, and the major geological, technological,economic, environmental, social and governance issues. It involves 20 h of lectures and discussion of papers and it culminates with the presentation of comprehensive seminar and report by the participants. (1.5 credit units)

GEOL-813* Rock Engineering- Concepts and Case Histories
Overview of development of rock engineering; discussion of acceptability criteria for engineering design; site characterization techniques and objectives; rockmass classification methodology and property determination; analysis of structural instability; assessment of stress; design of underground structures in weak rock; rock support design; risk management for rock engineering. Three hour lecture, two hours tutorial. Fall. Instructor: D. Jean Hutchinson. PREREQUISITE: Rock Mechanics course or permission of the instructor.

GEOL-815* Topics in Tectonics
A seminar-based course focussing on advanced concepts in structural geology and Tectonics. Topics may include flow concepts applied to ductile deformation, description and interpretation of microstructural fabrics, subduction processes, fluid and faulting, modelling approaches to Tectonic problems, and exhumation processes of metamorphic rocks. Far field effects such as lithosphere rheology, climate, and erosion will also be discussed. Three hour lectures; Winter. L. Godin.
PREREQUISITE: Permission of the instructor.

GEOL-816* Structural Analysis
Mechanisms of brittle and ductile deformation applied to geological structures and rock fabrics. Emphasis is on structures in fold and thrust belts, fracture and vein analysis, and studies of superposed deformation. (Offered jointly with GEOL-481*, but extra assignments are given.) Two hours lecture, 1 hour tutorial; 2 hours lab; Winter. L. Godin.

GEOL-817 Presenting Science
This course covers key theoretical principles and practical applications for presenting science. Students will learn about different types of presentations and means for presenting scientific data based on their target audience. It should be emphasized that the "science" component of this course is also critically important and therefore students are expected to select their presentation topics according to their scientific discipline. (1.5 credit units) PREREQUISITE: Permission of the instructor.

†GEOL-822* Metallogeny in Mineral Exploration
The major geological environments considered from a plate tectonic perspective, and their associated ore deposits: approaches to the definition of the characteristics of ore deposit types, with particular emphasis on the role of theories of ore genesis in defining geological criteria for area selection in mineral exploration. (May be offered jointly with GEOL-422*, depending on enrolment.) Three hours lecture, three hours seminar, seminar/laboratory; Fall. G.R. Olivo, Coordinator.

GEOL-835* The Environmental Impact of Mining
This course will expose students to the concepts and the current practice of mine waste management including acid mine drainage, neutral-pH metal leaching, secondary mineral precipitates, prediction and permitting, site remediation, etc. Students who complete this course will have a comprehensive understanding of the nature of the environmental impact of mining on ecological and human health, the scientific principles behind the interaction between mine waste and the surface environment, and the tools that professionals use to predict, control, remediate and regulate metal mining activities. Offered as full course or module. The course includes a three-day workshop, six 2-hour laboratory sessions and a three-day field trip. Winter. H. Jamieson. Field trip fees are approximately $100.

GEOL-838 Basin Analysis and Economic Deposits
A review of the tectonic origin and filling of various types of sedimentary basins, followed by an examination of the diagenesis of siliciclastic, carbonate and organic sediments, and the implications for the occurrence of hydrocarbons and mineral deposits. (1.5 credit units) PREREQUISITE: GEOL 238* or equivalent; GEOL 365* or equivalent

GEOL-839* The Geochemistry of Fluids Associated With Economic Ore Deposits
Basic principles of litho- and aqueous-geochemistry. New principles involving stable and radiogenic isotope geochemistry will follow. The hydrologic cycle will be examined from a geochemical perspective, leading to discussion of hydrothermal fluids and ore deposits associated with hydrothermal alteration. Phase equilibrium, mineral stability, oxidation-reduction reactions, isotope geochemistry, and other characteristics of hydrothermal fluids. The origin and chemical compositions of magmatic and metamorphic fluids. (Portions of the course are given jointly with GEOL-465*.) Three hours lecture, three hours laboratory. Winter. T.K. Kyser.

GEOL-840* Problems in Geology
An investigation of selected geological problems. Staff. Offered on demand.

GEOL-841* Special Topics in Geology & Geological Engineering I
A course unit composed of two modules on topics in the geological sciences and geological engineering. Each module will consist of a workshop, short course or extended field trip, as approved by the Department. The unit will be completed within two years. Specific modules offered during each academic year will be announced on the department's web site in September or, in exceptional circumstances, as opportunities arise. Modules taken for GEOL-851* are not eligible. Staff.

GEOL-843* Problems in Geological Engineering
An investigation of selected geological engineering problems. Staff. Offered on demand.

GEOL-847* Topics in Paleontology
An investigation of selected paleontological problems. Seminar weekly plus a project and a major essay. G.M. Narbonne. Offered on demand.

GEOL-849* Economic Guidelines for Exploration Planning
The course develops those evaluation skills which enable exploration geologists and engineers to translate their technical knowledge and expertise into economic planning criteria. Cost, risk, and return characteristics of mineral exploration; introduction to economic evaluation; cash flow and time value concepts; discounted cash flow methods; mining taxation considerations; sensitivity and risk analysis techniques; exploration economics and strategies; evaluation of exploration projects; exploration planning issues, financial statement analysis. Lectures in the fall term and in December during the intensive course on Economic Guidelines for Mineral Exploration. Fall. M. Doggett.

GEOL-851* Special Topics in Geology & Geological Engineering II
A course unit composed of two modules on topics in the geological sciences and geological engineering. Each module will consist of a workshop, short course or extended field trip, as approved by the Department. The unit will be completed within two years. Specific modules offered during each academic year will be announced on the department's web site in September or, in exceptional circumstances, as opportunities arise. Modules taken for GEOL-841* are not eligible. Staff.

GEOL-853* Methods of Geological Data Analysis
A broad base of digital and analog methods will be used to examine the collection, correction, and analysis of geologic data. Field data collection using GPS and handheld computers will lead to a discussion of field data semantics, Geographic Information Systems technology, and the acquisition and distribution of data across the Internet. Manipulation of air photo and remotely sensed imagery will lead to a discussion of

state of the art geologic sensing systems including Radar and Hyperspectral methods. The underlying theme of the labs and assignments will be the application of these techniques to resource and environmental assessment. (Offered jointly with GEOL-463*.) Two hours lecture, three hours laboratory; Fall. R.M. Harrap.

GEOL-862* Resources and Sustainability
This course addresses the role of mineral exploration and mining industries in providing wellbeing for people and ecosystems; includes discussions of the global distribution of, and demand for, water, energy and mineral resources, and the major geological, technological, economic, environmental, social and governance issues. It culminates with the design of solutions based on sustainable management. 3 hours, 1 hour tutorial: including lectures, panel discussions and seminars. Winter. G.R. Olivo.

GEOL-866* Isotopes and the Environment
A course for advanced students in the fields of biology, chemistry, geography or geology in the principles of stable isotope and radiogenic isotope systematics in natural processes. Emphasis will be placed on the use of isotopes in tracing elemental cycles, biological cycles and hydrologic cycles and how some isotopes can be used to place constraints on the timing of specific events within these cycles. (Offered jointly with GEOL-466*.) Three hours lecture, two hours laboratory; Winter. T.K. Kyser. PREREQUISITE: CHEM-112 (or equivalent), or permission of instructor.

GEOL-873* Applied Numerical Analysis for Rock Engineering
Course focuses on a comprehensive suite of numerical analysis techniques suited to geotechnical design of rock structures and analysis of rockmass stability in natural and engineered settings. Finite element, finite difference, discrete/distinct element and boundary element methods are all discussed with hands-on application workshops using state-of-the-art geomechanics software. Analytical models and pre- and post-processing techniques suited to typical rock engineering problems are developed through assignments. Strength criteria and non-linear inelastic constitutive models for continuum plasticity, brittle fracture and discontinuum deformation are explored in detail. Projects involving real case histories are undertaken to highlight the application of and engineering judgment associated with numerical analysis for problems involving rockmasses. 2 hours lecture, 2 hours lab; Winter. M.S. Diederichs.

GEOL-875* Exploration and Environmental Geochemistry
Principles of rock-water interaction and element migration in the near surface environment applied to environmental and exploration geochemistry. Students learn field and analytical techniques, evaluate and interpret geochemical data, and design solutions related to geochemical hazards to human health, environmental impacts of

mining, and formulation of strategies for detecting mineral deposits. Field trip fee: $50
PREREQUISITE: Permission of the instructor
EXCLUSION: GEOL 475, GEOL- 865 and GEOL-885

GEOL-878* Terrigenous Clastic Sedimentology
Detailed examination of depositional processes and external controls on the facies organization and sequence stratigraphy of fluvial, coastal, shelf and deep-marine environments. Introduction to sedimentary basin types. Required extended field trip during term. Three hours lecture, three hours lab; Fall. R.W. Dalrymple.
PREREQUISITE: GEOL-238* or permission of the instructor.

GEOL-879* Satellite Geophysics and Applications
Theory and application of observing geophysical fields from space-borne platforms. Orbital mechanics, signal propagation, uncertainty will be addressed. Current missions including radar and laser altimetry, gravimetry and magnetometry, and synthetic aperture radar. Applications in science and engineering (site investigation, geodynamics, ocean and ice, natural resources) through student projects.

GEOL-882* Petrogenesis of Carbonate Rocks
The alteration of carbonate sediments in different diagenetic environments leading to the formation of limestone and dolomite. Topics addressed will include biological and chemical modification, cementation, neomorphism, porosity evolution and karst. Emphasis to be on rock-water interactions as revealed through petrography as well as trace element and isotope geochemistry. Three hours; seminars, selected lectures and laboratories; Fall. N. James.
PREREQUISITE: GEOL-368 or permission of instructor.

GEOL-883* Carbonate Facies Dynamics
Principles of carbonate facies models as derived from modern environments and ancient successions. Assessment of current trends in modelling and the temporal response of carbonate systems to intrinsic and extrinsic controls. Three hours, seminar; fall. N. James.
PREREQUISITE: GEOL-368 or permission of instructor.

GEOL-884* Satellite Positioning
Principles and applications of space-based systems for geo-spatial data acquisition with particular focus on Global Navigation Satellite Systems and Geodetic Satellite Missions. Applications for small to mid-scale engineering problems and larger scale Earth monitoring systems. PREREQUISITE: Permission of the instructor.

GEOL-888* Geological Evolution of North America
An advanced course discussing the principles of earth evolution as exemplified by North America. The holistic approach illustrates the way in which geodynamics, geochemistry, sedimentation, paleo-biology and oceanography are used to unravel the history of the continent. (Offered jointly with GEOL-488*.) Three hours lecture; five day field trip; Fall. N. James, and R. Harrap.
PREREQUISITE: A geology core program or permission of the instructor.

GEOL-889* Exploration Seismology
Theory of elastic waves and seismic processing methods. Application of seismic reflection and refraction methods to oil and gas exploration. Hands-on experience in seismic data processing using leading-edge software systems. PREREQUISITE: Permission of the instructor.

GEOL-898 Master's Project (Non-Research)

GEOL-899 Master's Thesis Research

GEOL-978* Topics in Clastic Sedimentology
An investigation of selected problems related to sediment transport and deposition, environmental dynamics, external controls on sedimentation, and sequence stratigraphy of clastic sediments. Seminar weekly. R.W. Dalrymple. Offered on demand.

GEOL-999 Ph.D. Thesis Research

GERMAN LANGUAGE AND LITERATURE

All graduate courses offered in the Department of German are half-courses (i.e., one-term courses of three hours per week) which are offered either in the fall or the winter term. Not all of the courses listed below will be offered each year. Students should consult the Graduate Coordinator in the department about courses offered in any given year, so that whenever possible programs can be arranged to suit their individual needs and interests.

GRMN-800 Professional Skills and Theoretical Contexts
An introduction to the practical, professional, and theoretical contexts of graduate studies in German literature, this non-credit tutorial of two hours per week during the fall and the winter term is obligatory for all graduate students not specifically excused by the Graduate Coordinator. Two term hours; fall and winter. All faculty.

GRMN-851* Rationalism, Rococo, and Sturm und Drang
A study of important aspects of the pre-classical period, centred on the works of either Lessing or the authors of the Sturm und Drang.

GRMN-862* Weimar Classicism
An introduction to the historical situation of this movement, a close reading of several of its core works, and a discussion of its critical legacy. Three term-hours; winter. D.V. Pugh.

GRMN-863* 18th-Century Aesthetics
A historical survey of the development of aesthetics and criticism in eighteenth-century Germany. Fall term. D.V. Pugh

GRMN-865* Goethe
This course is designed to familiarize students with a representative selection of Goethe's poetry, drama, and prose works. Three term-hours; winter. A. Bohm.

GRMN-870* Early German Romanticism
After examining the background and the characteristics of the Romantic period, this course will concentrate on Frühromantik, with emphasis on Novalis.

GRMN-871* German Romanticism
The emphasis in this course will be on Heidelberger Romantik and on Spätromantik, concentrating on Brentano and Hoffmann respectively.

GRMN-872* Heine
This seminar is intended to deepen understanding of German literary and intellectual history of the first half of the 19th century, taking the dominant figure of Heinrich Heine as a paradigm to show the crosscurrents of his own time and his influence as one of the first engaged writers of the post-Romantic period.

GRMN-881* German Drama of the 19th Century
Detailed study of representative dramas from Kleist to Hauptmann. Three term-hours; winter.

GRMN-882* German Realism
This course uses theoretical, critical, and cultural approaches to discuss realist novels and novellas of the second half of the 19th century. C. Arndt.

GRMN-883* The German Novelle of the 19th Century
A representative sample of Novellen from Goethe to Hauptmann will be examined in detail. In addition to discussing the style and content of each work, an attempt will be made to reach some conclusions concerning the problematic nature of the genre. Three term-hours; fall. W.Nell

GRMN-884* Fin-de-siècle Vienna
A study of selected writings of major authors active in Vienna around 1900, including George, Hofmannsthal, and Schnitzler, examined in the larger historical, political, and cultural context. Three term-hours; winter. J. Scott.

GRMN-885* Topics in Psychoanalytic Criticism
Offering an introduction to several different theorists and periods of psychoanalysis from Freud to the present, this seminar will examine the intersections of psychoanalytic thought and literary texts from various genres and periods. Three term-hours; fall. J. Scott.

GRMN-886* Thematic Studies in Modernism
This seminar will treat a specific theme in modernist literature and thought, examining a variety of authors and genres with relation to a particular issue such as mythological adaptation, mourning, memory, subjectivity, or sexuality.

GRMN-887* Postwar German-Jewish Literature
A study of Jewish literature in the German-speaking world since 1945, including such authors as Becker, Behrens, Biller, Dischereit, Honigmann, Menasse, Rabinovici,

Schindel, and Seligmann. Discussion will include issues of diaspora, generation, and gender.

GRMN-888* Contemporary Women's Literature in German
A study of selected texts by women writers in the German-speaking world from 1968 to the present. Special attention will be paid to themes and writing strategies that reflect women's consciousness of self and the world. Not offered 2008-2009.

GRMN-890* Special Topics
Specialized study, as circumstances permit, of a particular author, genre, theme, movement, literary form, or some combination of these elements. Three term-hours; winter. A. Bohm.

GRMN-891* Narrating Nations
This course explores literature and film of the Germanies with a special emphasis on Cold War narratives of colonialism, fascism, and transnationalism.

GRMN-892* The German Novel
A study of the German novel, its theory and development, with particular emphasis on 20th-century authors, e.g., Hesse, Böll, Kafka.

GRMN-894 Master's Oral Examination
After satisfactory completion of eight term-length courses, the MA candidate will have to pass a 50-minute oral examination on aspects of German literature and culture. Typically, the student will prepare 5 primary texts of substantial length and, if applicable, a limited number of secondary texts.

GRMN-895* Modern German Literature and Film
A study of the relationship between literary texts and film adaptations. Special emphasis will be placed on the close examination of narrative techniques in selected texts and in the films they inspired. Three term-hours; winter. J. Hosek

GRMN-896* 20th-Century Studies I
Specialized study of literature in German during the period 1900-1945, focusing on the detailed examination of a particular genre, theme, movement, literary form, or author, or some combination of these elements. Three term-hours; fall. J. Scott.

GRMN-897* 20th-Century Studies II
Specialized study of literature in German during the period since 1945, focusing on the detailed examination of a particular genre, theme, movement, literary form, or author, or some combination of these elements. Three term-hours; fall. P. Fachinger.

GRMN-898 Master's Project
After satisfactory completion of six term-length courses, the MA candidate will have to write an MA project of approximately 50 double-spaced pages. Once the project has been passed by the supervisor and one additional departmental reader, the candidate will defend his/her project in a 50-minute discussion including other department members.

GRMN-899 Master's Thesis Research

GRMN-901* Theory of Narrative
An introduction for students of German literature to the major contemporary currents in the poetics of narrative fiction, focusing on a consideration of structuralist and semiotic theories of narrative and their practical application to selected texts. Three term-hours; fall.

GRMN-903* 21st-Century Studies
Specialized study of German literature and/or film in the 21st century, focusing on the detailed examination of a particular genre, theme, movement, literary form, or author, or some combination of these elements.

GRMN-904* Terrorism in Contemporary Literature and Film
A study of representations of terrorism in recent literature and film, focusing on those of the Red Army Faction and the events of September 11, 2001 and their national and global repercussions.

GRMN-905* Contemporary Transnational German Literature and Film
A study of cross-cultural contact and interaction in contemporary German literature and film. 3 term-hours; Fall 2010. P. Fachinger.

GRMN-999 Ph.D. Thesis Research

GLOBAL DEVELOPMENT STUDIES

DEVS-801* The Political Economy of Development
This course provides a comprehensive introduction to the relationship between political economy and the ideas and practices of development. The course grounds students in core theories, both classical and contemporary.It then examines key themes and controversies to illustrate the relationships between the political economy and development policies. This is a mandatory course for all graduate students in Global Development Studies.Three term-hours; Fall. S. Soederberg.

DEVS-802* The Cultural Politics of Development
This course provides a comprehensive introduction to the cultural politics of development in historical and contemporary perspective. The course focuses on narratives of development and their relationship to social and political movements in the South and North. Themes include the ideas of tradition; modernity and progress; colonialism, nationalism and liberation; and the gendered and racialised politics of development. This is a mandatory course for all graduate students in Global Development Studies. Three term-hours; Fall. R. Day

DEVS-803* Qualitative Research Methods and Fieldwork
The course will introduce graduate students to qualitative field research through a combination of coursework and fieldwork. The course will cover research design, proposal writing, research ethics, qualitative research methods - concentrating on interviewing and observation, and data analysis, in order to provide students with a grasp of important elements underlying successful fieldwork design, implementation and reporting. It also provides broad contextual skills for working productively within development organisations, therein laying the ground for potential internship positions.

DEVS-821* Advanced Topics in Global Development Studies 1
Provides a comprehensive seminar on a key topic in contemporary development studies. These graduate-level seminars are offered by regular faculty on topics related to their research. Consult the departmental homepage for further details of specific course offering each year.

DEVS-822* Advanced Topics in Global Development Studies 2
Provides a comprehensive seminar on a key topic in contemporary development studies. These are graduate-level seminars, offered by regular faculty on topics related to their research. Consult the departmental homepage for further details of specific course offering each year.

DEVS-823* Advanced Topics in Global Development Studies 3
Provides a comprehensive seminar on a key topic in contemporary development studies. These are graduate-level seminars, offered by regular faculty on topics related to their research. Consult the departmental homepage for further details of specific course offering each year.

DEVS-824* Advanced Topics in Global Development Studies 4
Provides a comprehensive seminar on a key topic in contemporary development studies. These are graduate-level seminars, offered by regular faculty on topics related to their research. Consult the departmental homepage for further details of specific course offering each year.

DEVS-825* Advanced Topics in Global Development Studies 5
Provides a comprehensive seminar on a key topic in contemporary development studies. These are graduate-level seminars, offered by regular faculty on topics related to their research. Consult the departmental homepage for further details of specific course offering each year.

DEVS-826* Advanced Topics in Global Development Studies 6
Provides a comprehensive seminar on a key topic in contemporary development studies. These are graduate-level seminars, offered by regular faculty on topics related to their research. Consult the departmental homepage for further details of specific course offering each year.

DEVS-827* Advanced Topics in Global Development Studies 7
Provides a comprehensive seminar on a key topic in contemporary development studies. These are graduate-level seminars, offered by regular faculty on topics related to their research. Consult the departmental homepage for further details of specific course offering each year.

DEVS-828* Advanced Topics in Global Development Studies 8
Provides a comprehensive seminar on a key topic in contemporary development studies. These are graduate-level seminars, offered by regular faculty on topics related to their research. Consult the departmental homepage for further details of specific course offering each year.

DEVS-829* Advanced Topics in Global Development Studies 9
Provides a comprehensive seminar on a key topic in contemporary development studies. These are graduate-level seminars, offered by regular faculty on topics related

to their research. Consult the departmental homepage for further details of specific course offering each year.

DEVS-850* Professional Seminar in Development Studies
This course provides a forum to discuss practical, ethical and methodological issues in conducting development research and writing, including major research papers, thesis work, and grant applications. All Global Development Studies graduate students will be enrolled in this course. Monthly meetings; Fall-Winter. M. Taylor.

DEVS-861* to DEVS-869* DEVS-861* to DEVS-869* are seminars offered by regular and visiting faculty on development topics related to their research interests. Consult the departmental homepage for further details of specific course offering each year. These are mixed senior undergraduate/graduate level courses with limited space for graduate students. Graduate students may not take more than three such mixed courses. Graduate enrolment opens after the undergraduate enrolment period (consult with department).

DEVS-861* Topics in Development Studies 1
Offered jointly with DEVS-492-002 with additional work required.
PREREQUISITE: MA standing in Global Development Studies, or permission of the Department. EXCLUSION: DEVS-492-002

DEVS-862* Topics in Development Studies 2
2018-2019 Topic: Alliance Politics, Solidarity Movements in the Global Context
Offered jointly with DEVS-492-007 with additional work required.
PREREQUISITE: MA standing in Global Development Studies, or permission of the Department. EXCLUSION: DEVS-492-007

DEVS-863* Topics in Development Studies 3
2018-2019 Topic: Sustainable Development or Green Growth?
Offered jointly with DEVS-492-008 with additional work required.
PREREQUISITE: MA standing in Global Development Studies, or permission of the Department. EXCLUSION: DEVS-492-008

DEVS-864* Topics in Development Studies 4
2018-2019 Topic: Development, Power, and Inequity in the Global North
Offered jointly with DEVS-492-015 with additional work required.
PREREQUISITE: MA standing in Global Development Studies, or permission of the Department. EXCLUSION: DEVS-492-015

DEVS-865* Topics in Development Studies 5
Not offered 2018-19.
Offered jointly with DEVS-492-014 with additional work required.
PREREQUISITE: MA standing in Global Development Studies, or permission of the Department. EXCLUSION: DEVS-492-014

DEVS-866* Topics in Development Studies 6
2018-2019 Topic: Approaches to Sustainable Livelihood Development
Offered jointly with DEVS-492-004 with additional work required. Three term-hours; Fall. M. Hostetler
PREREQUISITE: MA standing in Global Development Studies, or permission of the Department. EXCLUSION: DEVS-492-004

DEVS-867* Topics in Development Studies 7
2018-2019 Topic: Two Indias of the 21st Century
Offered jointly with DEVS-492-013 with additional work required.
PREREQUISITE: MA standing in Global Development Studies, or permission of the Department. EXCLUSION: DEVS-492-013

DEVS-868* Topics in International Development 8
Offered jointly with DEVS-492-010 with additional work required.
PREREQUISITE: MA standing in Global Development Studies, or permission of the Department. EXCLUSION: DEVS-492-010

DEVS-869* Topics in International Development 9
Offered jointly with DEVS-492-006 with additional work required.
PREREQUISITE: MA standing in Global Development Studies, or permission of the Department. EXCLUSIONS: DEVS-492-006, DEVS-864

DEVS-870* Topics in International Development 10
Seminar offered by regular and visiting faculty on development topics related to their research interests. Consult the departmental homepage for further details of specific course offering each year. These are mixed senior undergraduate/graduate level courses with limited space for graduate students. Graduate students may not take more than three such mixed courses. Graduate enrolment opens after the undergraduate enrolment period (consult with department).

DEVS-871* Topics in International Development 11
2018-2019 Topic: Women and Environmental (In)justice (Fall)
Seminar offered by regular and visiting faculty on development topics related to their

research interests. Consult the departmental homepage for further details of specific course offering ech year. These are mixed senior undergraduate/graduate level courses with limited space for graduate students. Graduate students may not take more than three such mixed courses. Graduate enrolment opens after the undergraduate enrolment period (consult with department).

DEVS-872* Topics in International Development 12
2018-2019 Topic: Indigenous Theory
Seminar offered by regular and visiting faculty on development topics related to their research interests. Consult the departmental homepage for further details of specific course offering each year. These are mixed senior undergraduate/graduate level courses with limited space for graduate students. Graduate students may not take more than three such mixed courses. Graduate enrolment opens after the undergraduate enrolment period (consult with department).

DEVS-873* Topics in International Development 13
Seminar offered by regular and visiting faculty on development topics related to their research interests. Consult the departmental homepage for further details of specific course offering each year. These are mixed senior undergraduate/graduate level courses with limited space for graduate students. Graduate students may not take more than three such mixed courses. Graduate enrolment opens after the undergraduate enrolment period (consult with department). Not offered 2018-19.

DEVS-890* Directed Readings in Development Studies
Students whose proposed research lies outside the realm (thematic or regional) of regular and cognate course offerings may choose this option. In consultation with a willing supervisor, students must develop a unifying title, course description, and reading list of 2-4 key texts for each of 5-6 set topics leading toward an agreed upon set of assignments.

DEVS-891* Graduate Work Placement in Development Studies
Summer Term. PREREQUISITE: Successful application to convert from a one-year to a two-year (thesis option) MA in Global Development Studies, or permission of the Department.

DEVS-892* Special Topics in Global Development Studies
Course focuses on specific topics related to global development studies. Special topics are offered under the guidance of a faculty member in an area of the instructor's expertise.

DEVS-893* Special Topics in Global Development Studies
Course focuses on specific topics related to global development studies. Special topics are offered under the guidance of a faculty member in an area of the instructor's expertise.

DEVS-898* Master's Research Paper
Students will complete a library-based major research project (MRP) of 50-60 pages. The MRP will deal with a specific interdisciplinary question directly relevant to Global Development Studies, which may be thematic or theoretical in nature or focus on peoples or places generally associated with the Global South in the context of relations with the Global North.
PREREQUISITE: Permission of Grad Chair in consultation with a willing faculty supervisor, plus completion of two mandatory and four elective DEVS or DEVS-eligible courses.

DEVS-899 Master's Thesis
Research leading to a dissertation of 75-100 pages will usually involve the collection and analysis of primary data and be of publishable quality. Such data could include oral interviews, archival and other documentary sources, in some cases collected through field work.
PREREQUISITE: Permission of Graduate Chair in consultation with a willing faculty supervisor, plus completion of two mandatory and four elective DEVS or DEVS-eligible courses.

DEVS-950* Professional Seminar in Development Studies
Guiding students through the professional skills needed for completion of the doctoral degree, this course provides a monthly forum to discuss practical, ethical and methodological issues in conducting development research and writing and the transfer of these skills to academic and non-academic settings. Topics include effective pedagogy, writing for non-academic audiences, conference presentations, and working within organisational contexts.

DEVS-999 Ph.D. Thesis Research

HEALTH QUALITY

HQRS-840* (3 cr) Introduction to Quality, Risk and Safety
A comprehensive introduction of the historical, current and future state of quality, risk and safety. The developments of quality and safety research will be examined via the exploration of system enhancement, theoretical frameworks and tools for measuring system improvements. Spring/Summer term. L. Duhn and K. Sears.

HQRS-841* (3 cr) Process Improvement in Health Care
A solid foundation in the current methods of process improvement in healthcare settings by incorporating best practices for process definition, value stream mapping and performance measurement in the course. Root cause analysis, hypothesis testing methods, and design of experiments (DOE) and other related analytical methods will be taught using relevant examples from different healthcare settings. Fall. D. Zoutman.

HQRS-842* (3 cr) Research and Evaluation Methods to Assess Quality, Risk and Safety
Advance safety science knowledge through independent research using quantitative and qualitative methods, including topics in advanced research design, data management, and measurement and analysis techniques. Students are expected to generate a research proposal at the end of course. Not offered 2018-19.

HQRS-843*(3 cr) International Perspectives on Quality, Risk & Safety
This one-week intensive elective course in the U.K. provides a comparative analysis of issues and advances in healthcare quality, risk and safety in various countries and health care systems. Critical analysis of varying structural and procedural factors affecting healthcare outcomes will be the focus of the course. This course will be graded on a PASS/FAIL basis. Not offered 2018-19.

HQRS-844* (3 cr) Law, Risk and Healthcare
The intersection of areas of law, risk, and healthcare that create specific and unique complexities for a variety of professionals is explored in this course. Topics include accident law, civil litigation, insurance and risk management; the course concentrates on the intersections of these areas to synthesize both a coherent system of redress and a risk and safety conscious system for organizing social behaviour. Winter. G. Robertson and S.Ranganathan.

HQRS-845*(3 cr) Organizational Behaviour in Healthcare
Fundamental organizational behaviour concepts and theories and their use in healthcare settings are presented. Behavioural and organizational dynamics within and

beyond organizational boundaries are explored and analyzed. Fundamentals and skills to analyze, manage and change organizational dynamics in healthcare services are addressed. Fall. W. Knutsen and D. Tregunno.

HQRS-846*(3 cr) Human Factors in Healthcare
Human Factors as a discipline researches and provides information about human behavior, abilities, limitations, and relationship to the work environment (physical, organizational, cultural), and applies it to the design of safer and more effective tools, machines, systems, tasks, jobs, and environments. This course will cover the main human factors (e.g., perception, stress, workload, fatigue, etc.) that play a role in various healthcare contexts and can have a critical impact of the outcomes (e.g., care success, patient safety, job satisfaction, etc.)

Spring/Summer. A. Parush and R. Ilan.

HQRS-847*(3 cr) International Perspectives on Policy, Economics, and Quality Healthcare
This course examines concepts in health policy and health economics and how this relates to policy process and development. The concepts will be analysed from an evaluative perspective on effectiveness and efficiency in healthcare nationally and internationally. Spring/Summer. A. Johnson and K. Woo.

HQRS-898*(3 cr) Project in Healthcare Quality
The focus of this course is on the scholarship of integration, implementation, and application. Students will conduct a quality improvement project in an area of interest. They will conduct the project, and present findings in a major paper. T. Rotter and J. Medves

HQRS-900* Philosophy of Health Quality Science
The course examines the major philosophical traditions that have influenced the generation of knowledge related to the science of quality and improvement through empirical, interpretive and critical paradigms. It includes a critical analysis of world views, truth, theoretical perspectives, and constructs within and across disciplines, with an emphasis on relationships between philosophy, theory, research and practice toward the generation of new knowledge.

Fall. K. Sears and J. Medves.

HQRS-901* Research and Theory of Change Management and Leadership
This course examines concepts in change management and leadership as related to

improving the quality of healthcare delivery. Discussion will focus on contemporary issues in healthcare delivery with an examination of change management and leadership theory and principles. The theory and principles will be applied to organizational culture, the influence of policies, and the implementation and evaluation of best practices to advance healthcare safety. Winter. K. Spalding.

HQRS-902* Qualitative Methods for Research in Health Quality
This course prepares students to advance knowledge in the area of quality improvement using qualitative approaches. Topics addressed include the historical and philosophical foundations of qualitative research, research design, data collection, analysis, interpretation and knowledge translation. Fall. R. Egan.

HQRS-903* Quantitative Methods for Research in Health Quality
This course prepares students to advance knowledge in the area of quality improvement using quantitative methods. It focuses on conceptualizing research, measurement, design, sampling and reliability of measures. Emphasis is placed on the appropriateness of design for the level of theoretical knowledge available and the nature of the research problem to be investigated.

Winter. T. Rotter and L. Duhn.

HQRS-904* Internship in Health Quality
The internship involves a placement in an organization where research and theory on quality can be applied in a practical environment. The internship will be developed jointly with the organization and the learner and will require approval from the course supervisor and program director. Summer. K. Sears.

HQRS-905* Current Topics in Health Quality
A required doctoral course for all year two PhD in Health Quality students. This course will present current topics in health quality. Topics will be identified each year in collaboration with the learning needs identified by students. Potential topics may include the following: cyber security of sensitive data, leading and project management of large scale improvement, global issues in quality improvement, metrics, politics of change, laws and liability, transitions in care, implementing, spreading and sustaining improvement across health systems, funding and resources for improvement, knowledge dissemination and implementation, co-designing

improvement projects with patients and families, person centered care, social determinants of health, aging, Indigenous Communities, and mental health and

addictions. The course will include seminars, presentations from visiting scholars with sessions held every other week throughout the year. Winter. All Faculty Members.

HQRS-999 Thesis

HISTORY

SEMINAR COURSES

HIST-801 Religious Identity, dissidence and interaction in the pre-modern Mediterranean
This course examines the formation of religious identities and confessional cultures in the medieval and early modern Mediterranean world, including Muslim, Byzantine and Latin societies. It approaches these issues from two complementary vantages, examining intra and inter-religious difference. The course investigates the construction of religious orthodoxy and unorthodoxy, the nature of dissent, controversy and "heresy" in Muslim and Christian religious cultures. Likewise, it examines interreligious relations and experiences among Muslims, Christians and Jews and the treatment of religious minorities in the Mediterranean. It explores the possibility of an interplay between these two processes historically in the Mediterranean world in order to understand the consequences on religious and political cultures and identities. Not offered 2018-19.

HIST-802* Selected Topics in History I: Indigenous History pre 1800
"Early Modern Indigeneity" explores recent scholarship on the indigenous peoples of the North and South American continents and the Caribbean from 1400 to 1800. Topics include historiography, contact with Europeans, political ecology, literacies, slavery and diasporas, diplomacy, primary accounts and sources, religion, legal custom, commodities, and violence. Emphasis will be placed on current scholarly debates and the varieties of historical methods and students will be asked to research and present on debates that match the week's topic under consideration. A longer historiographic essay will be due at the end of the term. One term seminar; fall. N. van Deusen.

HIST-803* Topics in Irish History 1798 to the Present
An exploration of topics in the social, cultural, political and economic history of Ireland from the Rising of 1798 onwards (May be offered jointly with HIST-484). One term seminar; winter. D. Akenson.

HIST-804* The Atlantic World I
This seminar explores the exchanges, circulations, mobilities and interconnectedness of goods, texts, ideas and people comprising the four continents of the Atlantic World from the fifteenth through the eighteenth centuries. Topics explored in the 2017 seminar included encounters between different peoples, cultural geography, ethnographies, network ontologies, material circulations, cartography, and indigenous

and African slavery. We also spent several classes focusing on the early modern indigenous Atlantic. Topics will vary from year to year. Not offered 2018-19.

HIST-805* British North America, c. 1749-1880
This field seminar will survey the social, political, economic, cultural, and intellectual history of the British colonies that became Canada from roughly the founding of Halifax in 1749 to the Confederation era. Topics may include British imperialism, Native-newcomer relations, the development of neo-British settler societies, and the new social relations and institutional structures of an emerging capitalist and liberal order. One term seminar; winter. J. McNairn.

HIST-806* U.S. History since 1900
This course will introduce students to major works and themes in US history since 1900. Topics will vary from year to year. Consult the department website for details. One term seminar; fall. R. Currarino.

HIST-807 Reading French (If available)
This non-credit course is designed to develop students' reading skills in French. Although some grammar is covered, the primary emphasis is on comprehension of a wide variety of texts in French in order to equip graduate students for research. Assessment for this course will be either Pass/Fail. Students are not permitted to audit this course. However, they may write the final exam without enrolling in this course, as a way of satisfying the language requirements for the PhD in History. Assignments and evaluation:Three in-class tests (75%), final test (25%). Not offered 2018-19.
Prerequisite: Basic knowledge of French.
Exclusion: Open only to graduate students who need to fulfill their graduate language requirement.

HIST-808* Capitalism: A Historical View
This seminar approaches the economic, sociology and culture of capitalism from a global and historical perspective. Departing from an examination and critique of the European canon (Smith, Marx, and Weber) students will explore themes, question assumptions and develop a new understanding of the global dimensions of economic change and the resulting relations of power and inequality between peoples and within societies. One term seminar; winter. A. Salzmann

HIST-809* Imperial and Postcolonial History
This course examines the history of imperial formations and colonial contact in the British empire in the east in the 19th and 20th centuries, with a focus on the interdisciplinary and theoretical approaches of postcolonial criticism. Themes include

statecraft and governmentality, colonial development, race and diaspora, power and archives, decolonization and the afterlives of colonialism. Not offered 2018-19.

HIST-810* First Nations of North America
Examination of the ethnohistorical method and the writing of Native American history. Topics will include archaeology, anthropology, contact between Europeans and First Nations, trade, missionaries, colonization, and there will be a geographic focus on Canada and the United States and a chronological focus on the period 500 A.D. to 1900. Not offered 2018-19.

HIST-812* Selected Topics in History I: Radicalism, Revolution, and Religion in Russian History and Literature
In nineteenth-century Russia, religion, politics, and literature were inextricably intertwined. This course will look at how Turgenev, Dostoyevsky, and other Russian writers grappled with religious questions, revolutionary activism, and the role of the writer in society. In turn, the course will examine how literature influenced wider society, from radical political movements to artistic and poetic cultural organizations. (May be offered jointly with HIST 400.) One term seminar; fall. A. Siljak.

HIST-813* Topics in Modern European History I
This course will address key topics and historiographical debates in Modern European History. Not offered 2018-19.

HIST-814 The Social History of Modern Canada
Studies in Canadian society in its pre-industrial, industrial and postindustrial aspects, 1900-1975. Topics in labour, immigration, childhood, family, urban and rural history, with emphasis upon both the cultural and technological contexts of social change. Readings from the traditional and new social history literatures. The discussion is national in scope with focus upon distinctive regional developments. Not offered 2018-19.

HIST-815 Quebec Culture and Society, 19th-20th Centuries
Exploration of major topics and trends in the history of Quebec, and of the evolution of major cultural and societal aspects of the French-speaking population of Quebec during the last two centuries, from family formation and gender roles, to the role of the Catholic Church and popular entertainment. A working knowledge of French will be an advantage in this class. Not offered 2018-19.

HIST-818* Topics in Global Agrarian & Environmental History
A course on globalizing agrarian problems. Pressures on agrarian societies are

considered in relation to environmental history and the history of environmentalism. An overview of relevant literature illuminates challenges and transformations since 1900, including Green Revolutions and the weakening of collectivist modes of production. Discussion of current scholarly trends examines research on past practices as patterns of ecological sustainability. Not offered 2018-19.

HIST-819* Topics in the History of China Since 1949
The course examines how Maoist policies shaped the People's Republic of China, how the post-Mao reform programs emerged through negotiations between state and society, and the rapid, sweeping changes experienced by the Chinese people since the 1980s. A particular focus will be the local-level and the manner in which the business interests of Communist Party and military officials have shaped reform. (May be offered with HIST 499.) One term seminar; winter. E. Hill.

HIST-822 New World Societies
An exploration of how New World societies were born out of the contact between Europe, Africa, and the Americas that followed Columbus' landing in 1492. Topics will include contact, colonization, slavery, trade, race, culture, and creolization. Not offered 2018-19.

HIST-823* Canada's Racial State
This course is a study of nineteenth and twentieth century Canada in the context of non-Native settler colonialism, biopolitics and human rights activism. Students will be required to lead each seminar. One term seminar; fall. B. Walker.

HIST-824* Cultural History of Enlightenment France
An examination of how the Enlightenment changed French culture, focusing on key ideas of cultural development and stagnation, changing sensibility and sociability, and cultural institutions and venues. (May be offered jointly with HIST-424.) Not offered 2018-19.

HIST-825* Global, World, and Transnational History
This seminar is designed to provide an advanced level introduction to the methodological field of Global, World, and Transnational History based on the study of global problems, processes, patterns or issues. The course will cover the major trends in historiography, examine the primary epistemological issues, and explore how commodities, people and the environment serve as interesting and important methodological avenues. This course will also engage with the foundational debates in the field, and consider its pragmatic and epistemological challenges. One term seminar; fall. A. Chowdhury.

HIST-826* Culture Decades: Canada, 1945-
This course will examine selected themes in post-World War II Canadian social and cultural history. Themes include the intersection of foreign relations and nation-building, the ever-increasing influence of a largely U.S. based mass culture, Canadian elite and popular responses to perceived "Americanization," baby-boom culture, the development of the "affluent society" Canada style, suburbanization, gender constructions in "cold war Canada," narratives of English-Canadian national identity, and social movements in the "long 1960s". (May be offered jointly with HIST-401.) Not offered 2018-19.

HIST-827* Medieval Greece
An examination of the complex political history of the region now understood as Greece and its multiple societies, cultures and religious communities from the 4th - 15th centuries. Attention will also focus on the construction of identities for and within this region, both during the period itself and in later Ottoman, Western European and Modern Greek discourses. (May be offered jointly with HIST-441). One term seminar; winter. R. Greenfield.

HIST-828 The Crusades and the Latin Kingdoms
An exploration of key topics in the history and interpretation of the medieval Crusades. The society and culture of the Latin kingdoms will be studied, as will the impact of the Crusades on the peoples of the eastern Mediterranean, both Muslim and Christian. (Offered jointly with HIST-430.) Two term seminar; fall/winter. R. Greenfield and A. Husain.

HIST-829 The Italian Renaissance
This course explores the society and culture of the Italian Renaissance (ca 1100-1600). Students will read and discuss great works of literature (Dante, Petrarch, Boccaccio), philosophy (Ficino, Pico della Mirandola, Erasmus), political thought (Machiavelli, Guicciardini), lesser known sources, such as letters, diaries, and trial records, recent works of social history, and in general the historiography of the Renaissance. Topics include: humanism (the reception of classical antiquity), art, religion, plague, war; ideals and realities about family life, marriage, and gender. (May be offered jointly with HIST-419.) Not offered 2018-19.

HIST-830* Selected Topics in History: 20th-century Canadian History
This thematic course examines the main fields of 20th century Canadian history. Using a wide range of monographs and articles, the course will explore questions, issues, theoretical approaches, and debates in Canadian historiography, and will introduce students to key historical events and moments in the 20th century. Topics may include

gender, the environment, settler colonialism, labour and class, the welfare state, race and ethnicity, sexuality, transnationalism, childhood and youth, and memory and commemoration. One term seminar; winter. L. Pasolli.

HIST-831* Selected Topics in History: Race and Gender in Modern US
This course engages with foundational scholarship on race, gender, and the intersections between the two, with a specific focus on modern African American history. A continual process of interdisciplinary reflection runs throughout the course: students will be introduced to a variety of ways in which disciplines adjacent to History have contributed to our understandings of past formations of race and gender, while honing their specific skills of historical analysis through work on the modern United States. The course enables students to develop their understanding of a variety of methodologies and frameworks, to consider interconnections between the theoretical and the empirical – 'theory' and 'fact' – in the historiography, and to interrogate how critical scholarship of this type has both complicated and enriched historians' approaches to race and gender. Both are situated as modern, and malleable, constructions which are specific to the U.S., continually in flux, and frequently in tension with dominant expectations, norms, and values. Themes and topics to be studied include: gender in the post-Emancipation era; the law, racist science, and racialization; racial and sexual violence, gender, and Jim Crow; respectability and racial uplift; the Great Migration, the New Negro and the Harlem Renaissance; mass consumption, consumerism and consumer activism; wartime mass media - representations and responses; the modern civil rights movement; and, from Black feminism to Black Liberation. One term seminar; winter. L. Haidarali

HIST-835* Comparative Public Policy
Examines public policy in Western Europe, the United States and Canada from the late nineteenth century to the present day, with an emphasis on the post-1945 era. Topics include the rise of the welfare state (health care, employment, housing, pensions, family, and education policy); taxation; urban planning, economic policy, immigration policy, free trade and globalization. Not offered 2018-19.

HIST-836 Studies in Russian History
Major problems in the history of the Russian Revolution and the Soviet Union. Special emphasis is placed on the first two decades of Soviet rule and the Stalin period. Not offered 2018-19.

HIST-839* The State in Canada to 1914
This seminar explores how historians have studied the state, power, and authority in the long 19th century from diverse theoretical perspectives. Topics may include the new

political history, settler colonialism, and technologies of the liberal state such as maps, the census, treaties with First Nations and reservations, schooling, and the law. Not offered 2018-19.

HIST-840 Studies in 18th Century France: The French Revolution, 1789-1799
An examination of the main events of the French Revolution in the light of modern research. Special emphasis will be placed on cultural developments as seen in symbols, festivals, music, plays, caricatures, monuments, and architectural projects, using the rich collection of primary sources available at Queen's. A reading knowledge of French is desirable. Not offered 2018-1**9.**

HIST-841* U.S. History to 1900
This course will introduce students to major works in US history up to 1900. Not offered 2018-19.

HIST-843* Comparative Colonial North American Societies
A thematic examination of some of the social, cultural, religious and intellectual aspects of colonial societies in North America in the 17th, 18th and early 19th centuries. Special emphasis is placed on issues surrounding race, gender and status and how differing peoples and cultures interacted over time and in specific places and cultural contexts. One term seminar; fall. J. Errington.

HIST-850 Religion and North American Society, 1850-1960
Through select topics this course will probe the nature of religion and its profound influence upon Canadian and American society and culture, from the mid-nineteenth century to the 1960's. Topics include: method and theory in the writing of religious history; the nature and impact of revivalism; the relationship between religion, gender and class; and the nature and extent of secularization in the twentieth century. Not offered 2018-19.

HIST-851* Global African History
This course focuses on global African history from the Atlantic to the Indian Ocean and the African diasporas. Seminar topics include oral traditions and oral history; historical linguistics; subaltern voices and vocal subalterns; religious histories and histories of religions; civilizations and missions to civilize; the environment and developmental pursuits across time. One term seminar; winter. A. Weldemichael.

HIST-852* African Decolonization and In-Dependence
This advanced seminar offers an in-depth examination of African history since independence. Core topics include the contradictions of colonialism; upheavals of

decolonization; economic crises and famines after independence; dislocations of the Cold War and attendant socioeconomic re/mis-configurations; and the challenges and prospects of the 21" century, including the War on Terror and the rise of China (May be offered jointly with 400 level History course). Not offered 2018-19.

HIST-855* The British in India
This course examines the impact of colonialism in the subcontinent from the mid-eighteenth century to the present, with a focus on the diverse theoretical and methodological approaches to the study of colonial India. Not offered 2018-19.

HIST-858 The English Revolution and its Origins, 1600-1661
This course will explore recent historiographical trends in the study of early Stuart England and will deal with such areas as the nature of society, religious disputes, and both central and local politics in the period lasting from 1600-1661. (May be offered jointly with HIST-418.) Not offered 2018-19.

HIST-859* Modern Britain and the World
This course is an exploration of the history of Britain in the 19th and 20th centuries, with a particular focus on how the world shaped this history. Not offered 2018-19.

HIST-865 Selected Topics in History II: Empires and Intimacies
This course explores the transnational "emotional economy": that is, familial and intimate relations of power created in and by empires, in the late nineteenth and twentieth centuries. The readings are thematic and interdisciplinary, drawn from national and transnational contexts, primarily in the Americas. Topics include colonial knowledge formation, tourism, visual cultures, racialization, sexual politics and other bonds of affect. Two term seminar; fall/winter. K. Dubinsky.

HIST-866* Race and Ethnicity in Latin America, 1492 to the Present
This course examines the history of race relations in Latin America from European contact to the present day, focussing on the significant indigenous and African contribution to the complex multiethnic societies of Mexico, Central and South America. Major topics include indigenous resistance and adaptation to conquest and colonial rule, long-standing debates about assimilation versus cultural survival, and contemporary struggles over land, resources, and identity. The course also looks at slavery, emancipation, and the cultural contribution of Africans to modern Latin America, and at the much-debated assertion that Latin America provides a unique and less conflictual model of race relations (May be offered jointly with HIST-461.) One term seminar; winter. D. Parker.

HIST-867* Social History of Modernizing Latin America, 1860-1960
The history of everyday life in Latin America from 1860 to 1960, a century of global economic and cultural transformation. Themes include urbanization, the "social question," state and class formation, gender roles, crime, science and technology. Explores social history as a discipline. (May be offered jointly with HIST-462.) Not offered in 2018-19.

HIST-868 Topics in Modern European Intellectual and Cultural History
An in-depth examination of intellectual and cultural changes in continental Europe, 1750 to the present, organized around such themes as changing views of selfhood, rationality, emotions, irrationality, and technology. Movements that might be examined include the late Enlightenment, Romanticism, realism, and modernism. (May be offered jointly with HIST-468.) Not offered 2018-19.

HIST-876 Canada at War
An exploration of war in a Canadian context, with an emphasis on how war has shaped Canadian society and the relationship between Canada and its armed forces. Topics to be studied, from a Canadian perspective, include the military as a profession, military culture, combat stress, leadership, gender and sexuality in the military, and mutinies. Two term seminar; fall/winter. A. English.

HIST-877* History, Memory, Commemoration
Students will explore the multitudinous ways individuals and collectivities imagine, (re)create, perform and relate to their pasts, since the 19th century. This graduate seminar will introduce the major theoretical frameworks of collective memory, commemoration and memorials, public and institutional history, and other forms of collective memory making, using seminal Canadian, American and European case studies. Particular attention will be given to the major approaches developed over the last thirty years, introducing the most important researchers of this very popular field, also focussing on ground-breaking techniques and innovative primary sources. The major objective is to familiarize students with the best studies in the field and prepare them to undertake studies using these principles. One term seminar; winter. C. Caron.

HIST-878* US Culture and Society, 1945-
An examination of selected themes in US cultural history. Topics for discussion include mass consumer society, the postwar rise of the "affluent society," anti-communism, sexuality and gender, the television age, popular music, suburbanization, social upheaval in the 'long sixties, 'and the culture wars of the 1980s and 1990s. (May be offered jointly with HIST-400.) EXCLUSION: HIST-400. Not offered 2018-19.

HIST-880* Miracles and Magic in Byzantium
An examination of evidence for, attitudes towards, and perceived mechanisms of, miracles and magic in the Byzantine world, while considering differing theoretical approaches to and historiography of the subject. Topics to be covered will include: traditions of sanctity and miracle, demonology, and magic or sorcery (roughly categorized under protection, discovery and manipulation). (May be offered jointly with HIST-400). EXCLUSION: HIST-400. One term seminar; fall. R. Greenfield.

HIST-881* Religious Identity in Byzantium
Beginning with the creation of the concept of religious identity in the early Christian and Late Antique context, this course explores issues in the construction of an orthodox religious identity, and, in parallel, the establishment of dissidence as unorthodoxy in the Byzantine and East Mediterranean world to the fifteenth century. Not offered 2018-19.

HIST-882* Historiography of Medicine
An introduction to current issues in the historiography of medicine through an examination of subjects, methods, sources, historians, and texts. Students will be able to direct their readings to areas of individual interest pertaining to period or place. Not offered 2018-19.

HIST-883* Epistemological Issues in Medical History
An exploration of concepts of disease, with emphasis on the origin, history, and nature of the medical model, its advantages and shortcomings. The course will begin with discussion of readings concerning competitive theories of disease (e.g. ontological versus physiological views; person-centered versus population-centered). The history of the disease, tuberculosis, will be used as an initial example to orient students to the changing conceptualizations of single forms of suffering. (May be offered jointly with PHIL-871*; exclusion PHIL-871* under HIST-883* and exclusion of HIST-883* under PHIL-871*.) Not offered 2018-19.

HIST-884* Nobel Prize in Medicine: Who won it; Who didn't; and Why?
Since 1901 the Nobel Prize has been the ultimate certificate of major contributions in medical science. Yet, some Nobel achievements are now viewed with disdain (eg lobotomy, DDT); others seem incomplete or undeserved because they overlook workers who made key discoveries. By studying the work and careers of some laureates, students will become familiar with landmarks (and disasters) in twentieth-century science. They will also learn to write and criticize histories of science and commemoration. Mechanism: core and secondary readings, student presentations, essays. Not offered 2018-19.

HIST-885 The History of Sexuality
This course examines the history of sexuality in a comparative context, using Canada, Britain and the United States in the 19th and 20th centuries as a focus. (May be offered jointly with HIST-464.) Not offered 2018-19.

HIST-886* Topics in Early Modern Europe I
This graduate seminar examines topics in the political, social, economic, cultural and intellectual history of Early Modern Europe from the Renaissance to the French Revolution. Topics may include the rise of the modern state, the age of exploration and colonialism, revolution, gender and sexuality, intellectual and religious life, and economic transformation. One term seminar; fall. A. D'Elia.

HIST-887* Topics in Mediterranean History
This seminar approaches the history of the Mediterranean as a space of inter-religious and cross-cultural encounter in which to investigate religious, ethnic, linguistic and/or racial identity and diversity. It may also consider the economic, social, and political expressions and consequences of cosmopolitan interaction, conflict and coexistence on the societies of the Mediterranean zone.Topics and chronological framework change from year to year; consult history website for further details. One term seminar; fall. A. Husain.

HIST-888* Liberalism, Authoritarianism and Citizenship in Latin America
Key debates in the political history of Latin America from Independence (1820s) to the recent past. Themes include the tension between liberal and authoritarian traditions; struggles for civil, political, and human rights; populism and charismatic leaders; revolutionary and reactionary ideologies. Not offered 2018-19.

HIST-889* China's Revolutions, 1911 to 1949
A course on China's nationalist and communist revolutions. Readings explore rival revolutionaries' goals and programs. Seminars examine the internal and international struggles affecting the outcome of the civil war of 1946-1949. Not offered 2018-19.

HIST-890* Britain and the Empire
This course is an introduction to recent approaches to the study of the British Empire and draws extensively on scholarship that treats 'metropole' and 'colony' as a unified field of analysis. Themes include slavery and abolition, ideological justifications for empire, empires and intimacies, knowledge and power, 'race' and diaspora. Not offered 2018-19.

HIST-891* Topics in Early Modern Europe II
This graduate seminar examines topics in the political, social, economic, cultural and intellectual history of early Modern Europe from the Renaissance to the French Revolution. Topics may include the rise of the modern state, the age of exploration and colonialism, revolution, gender and sexuality, intellectual and religious life, and economic transformation. One term seminar; winter, J. Collins.

HIST-892* Topics in Modern European History II
This course will address key topics and historiographical debates in Modern European History. Please consult the department website for further details. Not offered 2018-19.

HIST-893* 19th Century Colonial North America
This course will continue to explore the themes considered in HIST-843* with particular reference to the nineteenth century. The course will also offer students the opportunity to engage in original research in the field. One term seminar; winter. J. Errington. PREREQUISITE: HIST-843* or permission of the instructor.

HIST-894* The Atlantic World II
This seminar examines the creation and subsequent decentring of an Atlantic World from the fifteenth through the nineteenth centuries. Topics may include encounters between different peoples, methods of conversion and cultural colonialism, ethnographies, economic and social exchange, diasporas, slavery, emancipation, and revolution. Topics will vary from year to year. Consult the department website for details. Not offered 2018-19.

HIST-895* Directed Reading
Individual directed reading/tutorials under the guidance of a faculty member in an area of the instructor's expertise. The course is one semester in length and is normally to be held in the fall. NOTE: HIST-895* may not be counted for credit as fulfilling part of the minimum two-course requirements for History graduate students.

HIST-896 * Directed Reading
Individual directed reading/tutorials under the guidance of a faculty member in an area of the instructor's expertise. The course is one semester in length and is normally to be held in the winter. NOTE: HIST-896* may not be counted for credit as fulfilling part of the minimum two-course requirements for History graduate students.

HIST-897 Directed Reading
Individual directed reading/tutorials under the guidance of a faculty member in an area of the instructor's expertise. Normally fall and winter. NOTE HIST-897 may not be

counted for credit as fulfilling one of the minimum two-course requirements for History graduate students.

HIST-898 Master's Essay Research

HIST-899 Master's Thesis Research

HIST-901 Approaches to History
An examination of major historical debates, schools of historical research and writing, and historical methodologies. This course is required for all Ph.D. candidates and open only to Ph.D. candidates. This course is marked on a pass/fail basis. Two term; fall/winter. A. Jainchill.

HIST-909 Canada, Military

HIST-999 Ph.D. Thesis Research

INDUSTRIAL RELATIONS

NOTE: All Analytical and Research Skills Seminars are 1.0 credit unit in weight. Other courses are 3.0 credit units in weight and are designated with *.

MIR-802-809, 811-819 Workplace Skills Seminars
These seminars are designed to provide students with critical analytical, research, and interpersonal skills required of Human Resources and Labour Relations professionals in the workplace. Each seminar normally meets over a four-week period, and students are required to take three seminars which together will be considered a half-course. Students also have the option of taking three additional seminars, which may be counted as an elective credit. Students will not be permitted to take more than six seminars. Students who wish to drop a seminar must do so before the second scheduled class or with the permission of the instructor. The seminars are:

MIR-802 Seminars in Training and Development
Seminars on key employment topics such as team building, stress management, dealing with difficult people, etc. Specific topics may vary from year to year, as issues change and different instructors are involved. (Seminar; 1.0 credit units.) Not offered 2018-19.

MIR-803 Seminars in Analytics and Metrics Skills
Seminars on key employment topics such as quantitative and qualitative analytical methods and tools: design and use of metrics. Specific topics may vary from year to year, as issues change and different instructors are involved. (Seminar; 1.0 credit units.) Not offered 2018-19.

MIR-805 Seminars in Labour Relations
Seminars on key employment topics such as costing agreements, grievance handling, etc. Specific topics may vary from year to year, as issues change and different instructors are involved. (Seminar; 1.0 credit units.)

MIR-806 Seminars in Human Resource Management
Seminar on key employment topics such as recruitment, selection, interviews, opinions, surveys. Specific topics may vary from year to year as issues change and different instructors are involved. (Seminar; 1.0 credit units.)

MIR-807 Seminars in Negotiation and Collective Bargaining
Seminars on key employment topics negotiation skills and strategies, and collective bargaining that focuses on long term and sustained results. Specific topics may vary

from year to year, as issues change and different instructors are involved. (Seminar; 1.0 credit units.).

MIR-808 Seminars in Work Teams
Seminars relevant to building and managing effective work teams. Specific topics may vary from year to year, as Issues change and different instructors are involved. (Seminar; 1.0 credit units.)

MIR-809 Mediation Skills
This course is designed to introduce students to the basic principles of conducting a mediation in the context of a labour and employment dispute. Students will have an opportunity to co-mediate in a mock mediation. Experienced mediators will observe and coach students through the exercise. (1.0 credit units)

MIR-810* Unions and Collective Bargaining
The purpose of the course is to develop a critical understanding of the institutions of unionism and collective bargaining, their rationale, policies and procedures, and their effects on workers, organizations, and the society. The course is experiential and practical, building on the key conceptual principles of industrial relations. (3.0 credit units.)

MIR-811 Seminars in Health, Safety and Wellness
Seminars on key employment topics that support positive Individual and organizational outcomes with respect to workplace health and safety, individual wellness, and employee mental health. Specific topics may vary from year to year as issues change and different instructors are involved. (Seminar; 1.0 credit units.) Not offered 2018-19.

MIR-812 Seminars in Employment Ethics and Legal Issues
Seminars on key employment topics such as legal considerations and consequences of workplace misconduct, unethical behaviour, human rights violation. Specific topics may vary from year to year, as issues change and different instructors are involved. (Seminar; 1.0 credit units.)

MIR-813 Seminars in Performance Management
Seminars on key employment topics such as performance appraisal, effective feedback and coaching. Specific topics may vary from year to year, as issues change and different instructors are involved. (Seminar; 1.0 credit units.)

MIR-815 Seminars in Diversity, Equity and Inclusion
Seminars on key employment topics regarding workplace management practices and programs that support employee inclusivity, equity and diversity. Specific topics may vary from year to year, as issues change and different instructors are involved. (Seminar; 1.0 credit units.) Not offered 2018-19.

MIR-817 Seminars in Contract Administration
Seminars on contract language interpretation, grievance and arbitration processes, and legal responsibilities and requirements. Specific topics may vary from year to year, as issues change and different instructors are involved. (Seminar; 1.0 credit units.)

MIR-818 Seminars in Leadership
Seminars on developing skills to effectively manage and lead others. Specific topics may vary from year to year, as issues change and different instructors are involved. (Seminar; 1.0 credit units.)

MIR-819 Labour Arbitration Moot
The Filion Wakely Moot Competition is a wonderful opportunity for students in the MIR program to present arguments on a fictional case in a formal setting that simulates a real arbitration. Having just finished a mock arbitration in MIR-824, this gives students another chance to practice and refine advocacy skills. Students are assigned randomly to either the management or union sides. After the preliminary round, finalists are chosen to argue again in front a board of arbitration, including an arbitrator, and two nominees, one for management and one for union. The final round is observed by the whole class and the board provides feedback and comments after the arguments that enhance the learning experience for the whole class. (1.0 credit units.)

MIR-820* IR and Labour Law (two terms)
This course addresses the fundamentals of the law governing the individual employment relationship and the collective bargaining relationship; rights of the employee and employer at common law, and their modification by minimum standards statutes and human rights legislation; the development of contemporary collective bargaining legislation; the certification process; unfair labour practices; the duty to bargain; the collective agreement and its administration through arbitration. The arbitration and adjudication process will also be studied, including such topics as powers of arbitrators and adjudicators and evidentiary issues. Students will have an opportunity to perform in mock arbitrations and adjudications.(3.0 credit units.) Not offered 2018-19.
EXCLUSIONS: MIR-823 and MIR-824.

MIR-823* IR and Labour Law I
This course addresses the fundamentals of the law governing the individual employment relationship and the collective bargaining relationship; rights of the employee and employer at common law, and their modification by minimum standards statutes and human rights legislation; the development of contemporary collective bargaining legislation; the certification process; unfair labour practices and the duty to bargain. (3.0 credit units)
EXCLUSION: MIR-820

MIR-824* IR and Labour Law II
This course addresses the fundamentals of the collective agreement and its administration through arbitration. The arbitration and adjudication process will also be studied, including such topics as powers of arbitrators and adjudicators and evidentiary issues. Students will have an opportunity to perform in a mock arbitration and adjudications. (3.0 credit units)
EXCLUSION: MIR-820

MIR-825* Human Rights Law in the Workplace
The focus of this course is to provide students with the tools required to create and maintain a culture of human rights in the workplace. Through the use of case studies, students will learn how to apply legal principles and law to develop practical solutions to the challenges they are sure to face. (3.0 credit units)

MIR-826* Advanced Topics in Labour Law
This course is an advanced topics seminar providing contemporary perspectives on labour law. The course is intended to explore specific aspects of labour law that are relevant to industrial relations in depth. Specific topics may vary from year to year, as issues change and different instructors are involved. (3.0 credit units.) Not offered 2018-19.

MIR-830* Human Resource Management
This course will familiarize students with the basic responsibilities of the human resources function in organizations. The course covers topics such as strategic planning, job analysis, recruitment, selection, training and development, career planning, performance appraisal, compensation and international HRM. Students will learn about the various tools and techniques available to human resource professionals through the use of lectures, case analyses, student presentations, and the text book with supplemental readings. (3.0 credit units.)

MIR-840* Labour Economics and Industrial Relations
This course examines contemporary labour market behaviour and processes and considers some of the emerging labour market issues and policies that are relevant to the study of industrial relations. The approach is to relate theory and empirical research from labour economics to industrial relations and institutional analyses. A selection of major topics that are typically covered include: the demand and supply for labour; human capital investments; contracts and compensation; unions and their impacts; and labour market discrimination and related public policy; and NAFTA related implications. (3.0 credit units)

MIR-841* Contemporary Labour Policies
This course provides a basic overview of the major purposes and elements of current Canadian labour policy and emerging challenges in the context of changing external and internal environments. The three major areas of labour policy studied include regulations related to labour relations, labour standards, and labour markets in both the public and the private sectors. Among key areas studied include legislation and programs related to labour relations, pay equity, occupational health and safety, employment standards, worker compensation, unemployment insurance, as well as broader policy programs such as the federal sectoral councils program for skills development and adjustment. Although the main focus of the course is on Canada, aspects of North American or global developments relevant to Canadian labour policy will also be reviewed. (3.0 credit units)

MIR 850* Organizational Behavior
This course applies theories and methods from the behavioral sciences to the analysis of organizations. Students are introduced to classical and contemporary theories of organizational behavior at the individual, interpersonal, and organizational levels, with a particular emphasis on identifying evidence-based solutions to organizational problems in the context of employment relations. (3.0 credit units)

MIR 851* Relationships in Organizations
The purpose of this course is to create better understanding of the importance of relationships in organizations. Using a socio-psychological approach, the course will focus on topics central to relationship formation including social perception and cognition, attitudes and persuasion as well as inter-personal attraction and influence. Among the topics to be covered include attachment theory, social identity, social networks, organizational compassion, emotions, politics and influence tactics, diversity, harassment. (3.0 credit units). Not offered 2018-19.

MIR 852* Leadership in Organizations
This course examines theories and research findings from the behavioral sciences that are relevant to leadership and the influence process in groups and organizations. Topics may include personality, situational factors, intergroup processes, interpersonal perception as well as the motivation to both lead and follow. The course also explores the implications of leadership training, organization development, and action research. (3.0 credit units)

MIR-860* Advanced Topics in Employment
This course is an advanced topics seminar providing contemporary perspectives on employment relations, personnel management and organizational behaviour. The course is intended to explore selected topics in these areas in depth. Private and public sector industrial relations issues may be explored. Topics and instructors will vary from year to year. (3.0 credit units.) Not offered 2018-19.

MIR-870* Contract Administration
An advanced topics course that explores the management and application of the collective agreement post—negotiation. This course examines the link between contract administration, the bargaining environment, and issues brought forward for collective bargaining. Duty of fair representation, successor rights, bargaining history, and language—building, among other topics, will be considered.(3.0 credit units) Not offered 2018-19.

MIR-875* Finance and Accounting for HR/LR
This course provides an introduction to the basic principles and skills in accounting and finance that are relevant to employment relations specialists. Topic areas may vary from year to year but typically include financial concepts, statements and tools, principles of accounting, budgeting processes, financial forecasting, costing and reporting and the regulatory regime. (Offered online or on-campus). (3.0 credit units)

MIR-880* Compensation
This course examines the basic components of compensation systems (i.e., compensation objectives, job hierarchies, forms of pay, salary survey, etc.). A Canadian text is used that combines economic, sociological and psychological approaches to the study and design of pay systems. The course uses a detailed description of a hypothetical organization and a problem-oriented teaching method to explore topics such as the relationship between compensation systems and firm performance, and the tradeoffs between internal and external equity in the design of compensation systems. (3.0 credit units.) Not offered 2018-19.

MIR-885* Industrial Relations in the Global Economy
This course develops a critical appreciation of the role of industrial relations in a global economic environment. The emphasis is on providing an understanding of the nature and scope of adjustments and adaptations in labour-management institutions and relationships required to deal with international competitive pressures, focusing on strategic links between HR/LR and competitiveness, the Japanese challenge, evolving management approaches and strategies, union responses and the labour agenda, and restructuring experience in key Canadian industries. (3.0 credit units.) Not offered 2018-19.

MIR-886* Negotiations, Conflict Resolution and Workplace Behaviour
The object of this course is to develop industrial relations and human resource expertise including negotiation, conflict resolution and facilitation skills for those who will be employed in line, staff, or union positions in the public or private sectors. The course deals specifically with negotiation strategy and behaviour, labour and management attitudes and relationships, conflict and cooperation, methods of conflict resolution and facilitation, workplace innovations, strategic choice in IR/HR policy, new directions in IR/HR, and in the new roles of staff and line management in the high performance workplace. (3.0 credit units)

MIR-888* Advanced Topics in Labour Relations
The course is an advanced topics seminar providing contemporary perspectives on labour relations. The course is intended to explore specific aspects of labour relations in depth. Private and public sector labour relations issues may be explored. Specific topics may vary from year to year, as issues change and different instructors are involved. (3.0 credit units.).

MIR-889* Advanced Topics in Human Resources Management
The course is an advanced topics seminar providing contemporary perspectives on human resources management. The course is intended to explore specific aspects of human resources management in depth. Private and public sector human resource issues may be explored. Specific topics may vary from year to year, as issues change and different instructors are involved. (3.0 credit units). Not offered 2018-19.

MIR-891*,892* Directed Special Studies
The purpose of the directed special studies/reading course is to provide additional flexibility in the MIR program to enable students to pursue in-depth study of a topic/subject relating to industrial relations and human resources management that is not covered by existing course offerings. The scope of this course will be arranged by the student in consultation with the instructor. Although the exact course format and

requirements will depend on the nature of the subject area and on the discretion of the instructor, the following guidelines may be helpful: the minimum workload for the course is the same as required for a normal course; the student is normally required to undertake a review of the literature, including an annotated bibliography of the subject covered by the course; the student is normally required to write at least one major paper (minimum 20 typed pages or 5000 words in length) as a requirement for the course. The course is available only under special circumstances and with the permission of the Director. This course may be taken in any one of the three terms, but it can only be taken once during the MIR program.(3.0 credit units)

MIR-897* Analytical Methods in Industrial Relations
This course introduces students to research methods and tools used in the study of industrial relations. The course includes selected topics related to the application of labour economics, human resources management, organizational behaviour, and labour law approaches to the analysis of industrial relations. Specific topics and emphasis vary according to the instructor. (3.0 credit units)

MIR-898 Research Project
Written under the direction of a faculty supervisor and normally about 50 pages in length, the research essay provides students with the opportunity to undertake independent research of an IR/HR issue or a case study of an organization and to develop the ability to express their ideas in an organized and literate form. Preliminary work is normally completed in the winter term and research and writing conducted during the spring/summer term. Counselling for the research essay (choice of an appropriate topic, selection of a supervisor, etc.) is provided by the School. Every effort is made to inform students about the research interests and activities of faculty members and associates and to encourage them to undertake topics related to these. The written essay will be examined by a committee composed of the supervisor, and one other member of the faculty of the School or a related department. (offered based on supervisory availability).(6.0 credit units)

KINESIOLOGY AND HEALTH STUDIES

Notes:

1. Not all courses are offered in any one year. If a course is not offered in one year, it is frequently offered in the subsequent year.
2. Admission to all courses is in consultation and approval with the course instructor.
3. Every attempt will be made to arrange programs to suit the interests and needs of individual students.
4. The course timetable for each academic session is available on the School's web site.

KHS 830* Health Promotion Research Seminar
This colloquium-style course provides students with a foundation in various methods of practice-based discovery, primarily quantitative, used by health promotion researchers. Topics include ethics, study design, sampling, measurement, evaluation, and data analysis. The course is tailored each semester according to students' thesis needs. Offered jointly with EPID-830*.
EXCLUSION: EPID-830*

KHS-849* Motion Analysis
This course covers the application, instrumentation and techniques of human motion analysis. Topics include 2D and 3D kinematics, force measurement, link segment analysis and the application of these techniques to able-bodied and disabled populations. To integrate the material, the course combines readings, lectures, laboratories and projects. (Offered jointly with RHBS-872*/RHBS-972*).
EXCLUSIONS: RHBS-872*/RHBS-972*

KHS-851* Physical Tests and Measurement
An advanced theoretical and practical course covering the application, instrumentation and techniques of kinetics, kinematics, kinesiological electromyography, and anthropomectric analysis in the study of normal and abnormal human movement. (Offered jointly with RHBS-837*.)
EXCLUSION: RHBS-837*

KHS-853* Physical Bases of Ergonomics
A lecture-seminar-laboratory course dealing with occupational biomechanics, work physiology, anthropometry, and skill acquisition as related to workplace environments. Other physical factors of ergonomics to be studied will be: posture at

work stations, spinal and upper limb biomechanics, manual materials handling, and employee selection and fitness.
EXCLUSION: MECH-895*

KHS-859* Biomechanics of Human Movement
A seminar course on the biomechanics of human motion in rehabilitation, sport, and ergonomics. Topics include measurement and analysis techniques, modeling, and the study of selected applications of the biomechanics of human movement of able-bodied and disabled populations. Course offered in odd years jointly with RHBS-871*.
EXCLUSION: RHBS-871*

KHS-862* Community-Based Programming
In this seminar course students will apply theoretical concepts from the social and behavioural sciences, health education, and health communication to the planning, implementation, and evaluation of community-based physical activity programs. Interventions and programs for group, organization (e.g. schools), and community settings that target people, policies and the environment, will be emphasized. Offered jointly with EPID-862*.
EXCLUSION: EPID-862*

KHS-864* Advanced Topics in Sport Psychology
A lecture-seminar course designed to provide comprehensive coverage of sport psychology. The course examines the development of the field, general theories and concepts, forms of measurement, and issues in the current literature. PREREQUISITE: KNPE-363* or KNPE-365* or permission of the instructor.

KHS-865* Social Psychology of Sport and Exercise
A lecture/seminar course designed to provide a comprehensive perspective of the field of social psychology as it applies to sport and physical activity settings. Historical, broad theoretical frameworks and methodological considerations will be examined. PREREQUISITE: KNPE-265* or equivalent or permission of the instructor.

KHS-869* Bodies and Social Theory
This course explores key theoretical approaches to the meaning, mood, and matter of bodies in the contemporary world. Through a range of topics that may include food, cancer, toxins, sport, fitness, reproduction, biometrics, and pain, we will attend to both the vitality of bodies and their subjection within enduring structures of power. Readings will emphasize anti-capitalist, critical race, postcolonial, Indigenous, feminist, queer, and trans perspectives.

KHS-871* Critical Health Promotion
This course will provide students with the opportunity to examine the genealogy of health, health promotion, and population health over the past half-century and to apply critical thinking skill within current theoretical and methodological applications in health promotion studies. (offered jointly with HLTH-493).

KHS-872* Health Behaviour Change
Introduction to theories, measures, and statistical methodologies typically used in health and exercise psychology research. Students will learn to critically evaluate and apply these key principles.

KHS-873* Critical Methodologies: Politics of Knowledge
This seminar explores the politics of knowledge in research that aims at social change. Taking a historical approach, it draws on feminism, Indigenous Studies, post-colonialism, and other critical perspectives to develop a frame for post-positivist, qualitative research. PREREQUISITE: KNPE-367 or equivalent.

KHS-875* Qualitative Methods
This course is an introduction to graduate level qualitative methods. The goal of the course is to provide a foundation for graduate students to collect and analyze qualitative data using methods such as interviews, focus groups, and observation. EXCLUSION: RHBS-832*

KHS-884* Muscle Physiology
A lecture-seminar course in which muscular, metabolic, and endocrine adaptations to exercise will be discussed in detail focusing on the effects of acute exercise and physical conditioning on the major energy producing systems (carbohydrate and lipid metabolism). Summer 2013. Prerequisite: KNPE-427 or equivalent.

KHS-885* Oxygen Transport in Exercise: Cardiovascular and Respiratory Responses to Increased Muscle Metabolic Demand
A lecture-seminar course examining control mechanisms and limiting factors of the oxygen transport system's support of exercising muscle metabolism. Topics covered will include the mechanisms involved in regulation of muscle oxygen delivery, conflicting demands of blood pressure vs. muscle oxygen delivery vs. core temperature regulation, limitations to peak aerobic capacity. The impact of training on some of the above topics will also be explored. PREREQUISITE: KNPE-429* or equivalent.

KHS-886* Clinical Exercise Science
This is a lecture-seminar course in which the utility of exercise or physical activity as a

treatment strategy for a wide range of clinical outcomes will be considered. Both the acute and chronic effects of exercise on cardiometabolic risk factors will be considered. PREREQUISITE: KNPE-427 or equivalent.

KHS-887* Special Topics I
A focus on specific issues in one of the three fields of study offered which include Applied Exercise Science; Physical Activity Epidemiology and Health Promotion; and Psychology and Socio-Cultural Studies of Physical Activity. May be offered by current faculty or visiting scholars. PREREQUISITE: KNPE-427* or equivalent.

KHS-891* Statistics
A seminar course which will acquaint the students with the concepts and principles of quantitative statistical analysis including parametric and non-parametric methods. Students will present various topics throughout the course and critically evaluate research in their area of study.
EXCLUSION: RHBS-834*/RHBS-934*

KHS-892* Special Topics II
A focus on specific issues in one of the three fields of study offered which include Applied Exercise Science; Physical Activity Epidemiology and Health Promotion; and Psychology and Socio-Cultural Studies of Physical Activity. May be offered by current faculty or visiting scholars.

KHS-893* Physical Activity Epidemiology
A lecture-seminar course that investigates the epidemiological relationships among physical activity, fitness and health. The course also examines the historical development of the field, study designs and analytical frameworks. A particular emphasis is placed on issues in the current literature. Lectures: 1 x 3 hours

KHS-894* Applied Multivariate Data Analysis
The course gives students an introduction to multivariate and multilevel statistical modeling. After a thorough review of multiple regression analysis including interactions, non-linear relationships, and mediation, students learn the basics of analyzing data with a nested structure, such as individuals within groups or observations within individuals.
Lectures 1 x 3 hours

KHS-895*, 897* Individual Study
A study topic in a subject area related to biomechanics, exercise physiology, social psychology of sport and exercise and/or sociology of sport, selected by the student

under the guidance of a faculty member. Normally this course will take the form of a closely supervised reading course in an area of the instructor's expertise.

KHS-896* Special Topics III
This seminar course may cover topic areas including health behaviour change; sport psychology; exercise psychology; food studies; gender, sexuality and sport; neighbourhoods and health; globalization and health; social movements in health; HIV prevention; community-based participatory research; health, risk and the body. Offered by various graduate faculty or visiting scholars. One term only. Lectures 1 x 3 hours.

KHS-898* Individual Project
The student will work under the guidance of a project supervisor to complete a project. The completed project will be evaluated by the project supervisor and two other faculty members. PREREQUISITE: KHS-891*. One term only.

KHS-899 Master's Thesis Research

KHS-999 Ph.D. Thesis Research

LAW

LL.M. and Ph.D. students must enroll in LAW-880* *Legal Research Methods & Perspectives* and LAW-881* *Legal Research & Writing Seminar* in their first year of studies. LAW-880 introduces students to rigorous legal scholarship methods and perspectives, while LAW-881 teaches research skills helpful for success in graduate studies.

Students may receive an exemption from LAW-881 if they have completed a substantially similar course in their previous graduate work [i.e., a course that teaches legal research skills at a level higher than courses offered to first-year LLB/JD students]. Graduate students who qualify for this exemption must take either LAW- 914 or LAW - 915 or another course instead, to be determined in consultation with their supervisor and the Associate Dean (Graduate Studies and Research). Alternatives may include research methods courses offered in other faculties of the university.

COURSES FOR LAW GRADUATE STUDENTS (courses taken jointly with JD students): Graduate students will only be permitted to take these courses if they do not substantially duplicate courses taken prior to entry to the LL.M. program at Queen's. All graduate students who are taking JD courses that are evaluated on the basis of an examination are required to write a paper or series of papers as an alternative form of evaluation and in satisfaction of course requirements. Graduate students registered in courses taken jointly with JD students are expected to perform at a higher level of scholarship. Prerequisites may be waived by the instructor for graduate students with an appropriate background.

OTHER COURSES: Graduate students may take graduate-level courses in other departments and faculties in the University, with the permission of his or her supervisor, the Associate Dean (Graduate Studies and Research), the department or faculty offering the course and the School of Graduate Studies.

COURSES FOR NON-LAW GRADUATE STUDENTS: Information about courses in which graduate students not in Law may register can be found on the Faculty of Law website. Please contact the Faculty of Law Graduate Assistant lawgrad@queensu.ca for advice about the selection and registration process.

LAW-801* Reading Course

LAW-802* Animals, Politics and the Law

Animal law is one of the fastest-growing areas of law both domestically and internationally, but is also highly contested. Existing laws typically define animals as

the property of their human owners – a framework that many critics argue is unable to afford any true protection to the rights and interests of animals. Various models have been proposed to supplement, or entirely replace, this property framework. This seminar will explore existing legislative regimes related to animals in Canada and internationally, and the limited protections they offer. We will then explore a range of proposals by animal rights advocates for future reform of animal law. These include proposals to accord legal standing or legal personhood to animals, to recognize companion animals as members of the family, to accord farm animals and service animals the rights of workers, to accord wilderness animals rights to territory, and more generally to recognize animals as members of our political community, with rights to representation or citizenship. While many of these proposals may seem utopian, we can see preliminary manifestations of these ideas surfacing in a number of recent legal cases and campaigns for legislative reform. In Lesli Bisgould's terms, we can see a possible shift from "animal law" to "animal rights law". We will discuss the prospect for real change in this field, and the capacity of law to serve as a vehicle of justice for animals. Student evaluation will be based upon attendance, in-class presentations and a course paper. There will also be an opportunity for a limited number of students to enrol in an additional 3-credit independent study project to develop a legal opinion on a specific legal issue of animal law confronting Canada today. (To be offered jointly with LAW-250.) Three term hours.

LAW-803* Remedies

This is a course on civil judicial remedies. The primary focus will be on current problems and issues in the law of damages, but equitable remedies will also be discussed. You have encountered judicial remedies in earlier courses, such as contract and tort, which treat the topic as an adjunct to the study of particular substantive causes of action. In this context remedial questions are usually overshadowed by the study of substantive primary rights. This is unfortunate since remedial problems are among the most interesting and practically relevant in the law. Through a close analysis of remedial principles this course will enrich your understanding of the basic areas of private law. Three term hours.

LAW-804* Tax Theory and Policy

Why do we have taxes? What are the economic and social effects of particular forms of taxation? What should be the goals of a tax system? How can the tax system be designed to be fair and efficient? Particular attention is paid to current proposals for tax reform, in Canada and elsewhere. (To be offered jointly with LAW-504.) PREREQUISITE: LAW-508 Taxation (or equivalent)

LAW-805* Tax Policy
The principal aim of this course is to give students the opportunity to undertake a substantial research project into some aspects of tax law or policy of the student's choice. In order to prepare students for this task, the introductory part of the course will examine basic, theoretical issues, such as the objectives of taxation, taxation as a redistributory mechanism, the effects of taxation upon consumption and work choices, upon economic growth and international competitiveness. The remainder of the course will concentrate on important current tax issues such as taxation of the family unit, corporate tax reform, harmful tax competition and the various proposals for a 'flat tax'. (To be offered jointly with LAW-505.) Three term hours.

LAW-806* International Taxation
International Tax overviews the essential elements of the Canadian international income tax system, including tax issues surrounding investing in foreign countries and foreign investments into Canada. Tax planning for international e-commerce activities will comprise a significant element of the course. (To be offered jointly with LAW-506.) Three term hours. PREREQUISITE OR CO-REQUISITE: LAW-508 Taxation

LAW-807* Health Law
The course will provide an overview of fundamental legal issues in the field of health care. Beginning with the doctor-patient relationship, we will examine informed decision-making and the changing dynamics of medical practitioners and patients. This part of the course focuses on treatment decisions, substitute decision-making and medical malpractice. Following this we will explore questions in particular areas such as regulation of health professionals, construction of disease, reproduction and genetics, and confidentiality. In the course we will consider the extent to which core legal values are achieved in the health law area and analyze the impact on medical practice of legal practices and structures. (To be offered jointly with LAW-307.) Three term hours.

LAW-808* Taxation
A comprehensive introduction to income taxation and the principles and operation of the Income Tax Act. Some of the topics included in the course are residence, the definition of income, deductions, capital cost allowance, capital gains and the taxation of corporations and their shareholders. (To be offered jointly with LAW-508.) Four term hours.

LAW-809* International Criminal Law
This course explores the rapidly developing discipline of international criminal law (ICL), i.e. international efforts to prosecute individuals responsible for genocide, crimes against humanity and war crimes. We will examine: the major institutions, the politics

that shaped them, and how they in turn shape politics; definitions of crimes; principles and defenses; issues of transitional justice, amnesties and truth and reconciliation; and the major controversies and perspectives on ICL. The course supplements traditional instruction methods with considerable emphasis on active and interactive learning. Accordingly, seminars will include lecture, interactive discussion, videos, exercises and simulations. (To be offered jointly with LAW-410.) Three term hours.

LAW-810* Advanced Criminal Law

This seminar aims to explore, at an advanced level, various current issues in criminal law, procedure and evidence. Emphasis will be placed on areas where the law is conceptually challenging, controversial, or in flux. Specific topics to be discussed are likely to include, but will not be limited to, wrongful convictions, police interrogation, forensic science, jury adjudication, domestic violence, Aboriginal and restorative justice and cultural defences. Students will prepare short weekly response papers and participate in class discussions. Evaluation will be based primarily on a research paper on a topic chosen by the student and approved by the instructor. (To be offered jointly with LAW-411.) Three term hours.

LAW-811* Mining Law and Policy

Canada has been a leader in mineral exploration and mine development and finance for many decades. However, to prosper today many practices which are a carry-over from the 19th and 20th centuries must change. Failure to do so will adversely affect the long-term sustainability of the Canadian industry and the professionals who service it. Using film, small group discussion, role plays and lectures this course will provide an overview of the process by which minerals and gems are extracted, develop an understanding of how the national and international mining industry is structured and financed, and analyse the effects on the economy, environment, culture, and society. Students will critically evaluate existing and proposed laws and regulations in Ontario and Canada for mining, mineral processing, mine financing and corporate decision making having regard to the experience of communities, Aboriginal peoples and the mining industry in Canada and abroad. (To be offered jointly with LAW-514.) Three term hours.

LAW-812* International Law

This is an introductory survey course, in which we will discuss the general foundations of international law. Accordingly, we will discuss the sources of international law and the relevant actors (such as States and "peoples") and forums (such as the United Nations and the International Court of Justice). We will also examine selected topics such as state responsibility, extraterritorial jurisdiction, immunities, the use of force, the responsibility to protect and human rights. The course focuses not only on the relevant

rules but on how to analyze problems and construct successful legal arguments using international legal tools, in a milieu where power, politics and principles are in constant interplay. (To be offered jointly with LAW-540.) Three term-hours.

LAW-813* Labour Law

This course is a survey of the law of labour-management relations, with emphasis on collective bargaining in the private sector. It will first consider the purposes, regulatory strategies and functions of labour law as a form of regulated market ordering. It will then provide an overview of the legal background and context of collective bargaining, including constitutional divisions of powers, the common law contract of employment, and regulation of the individual employment relationship. It will review the key elements of the law of collective bargaining (acquiring and terminating bargaining rights, protection against unfair labour practices, duty to bargain, regulation of strikes, lockouts and other industrial disputes, arbitration of differences under collective agreements, protection of individual rights and interests), focusing on Ontario legislation and the freedom of association provisions of the Canadian Charter of Rights and Freedoms. Finally it will briefly survey how the new economy - including globalization and major changes in the Canadian economy and society - are reshaping labour law at the domestic and international levels today. (To be offered jointly with LAW-560.) Four term hours.

LAW-814* Jurisprudence

This course will be an introduction to philosophical study of the law. Subjects that will be discussed may include such things as the following: what law is; positivism and 'natural law'; the nature of legal authority and the obligation to obey the law; the rule of law; adjudication and interpretation; responsibility, liability, and punishment; legal rights; democracy, liberty, and equality; economic approaches to law; critical and feminist approaches to law. No philosophical background or training is necessary. (To be offered jointly with LAW-310.) Three term hours.

LAW-815* Advanced Labour

Advanced Labour Law: Human Rights in the Workplace. This course will examine selected human rights issues in the contemporary workplace. The class will challenge students to identify key human rights issues currently confronting Canadian employers and workers, to develop practical approaches for advising both employers and employees on the implementation and enforcement of workplace human rights laws, and to reflect on workplace human rights issues in Canada within a comparative and international context. This year, the course will focus on recent substantive developments in the law of discrimination on the basis of pregnancy and family status, the accommodation of disability and the problem of remedies for systemic

discrimination. We will also examine current challenges in the adjudication of workplace human rights, including the complex relationship between human rights tribunals and labour arbitrators, and the role of unions in workplace human rights enforcement. The seminar format will be a flexible blend of directed class discussion, guest speakers and student presentations. Enrolment is limited to 20 students. Students will be evaluated based on class participation, a 15-20 page paper and a seminar presentation related to the paper topic. (To be offered jointly with LAW-566.) Three term hours.

LAW-816* International Economic Law

As globalization gathers momentum, international laws governing how nations trade and invest across borders are increasingly important. Such laws increasingly limit government actions and affect peoples' daily lives. This course introduces international trade and investment laws. The course focuses on the World Trade Organization (WTO) laws on international trade, the application of those laws in Canadian law and the North American Free Trade Agreement (NAFTA) laws on foreign investment. We will also examine the common principles underlying international trade and investment laws and criticism of those laws. (To be offered jointly with LAW-465.) Three term-hours.

LAW-817* Environmental Protection Law

This seminar course will focus on the conceptual foundations of environmental protection law, and on the writing of a research paper. We will examine and challenge the principles that underpin environmental legislation and policy, and explore how to think about, research, and write about environmental law. Topics such as environmental regulation, ecosystem management, and liability for environmental harm will be considered. The emphasis will be on critical analysis of environmental law and policy. (To be offered jointly with LAW-517.) Three term hours.

LAW-818* Social and Economic Rights in Constitutional Law

This advanced course in constitutional law offers an in-depth analysis of several Charter rights, particularly s. 2, 7, and 15, with an emphasis on "positive" rights, that is, rights that requires governments not only to refrain from certain actions (such as limiting expression) but also to positively secure certain rights (such as healthcare). The course will be of interest to students interested in advanced constitutional law, in public policy, in social justice, or in the relationship between the constitution and economic regulation. As the jurisprudence on the aforementioned Charter rights is in constant flux, we will be addressing several recent cases and examining the way the doctrinal shifts contained in them have been used in case law and may be used by litigants in

future cases. Students will have the choice between a take-home examination and a paper. (To be offered jointly with LAW-305.) Three term hours.

LAW-819* Advanced Corporate Law
The purpose of the course is to examine in detail the principal legal issues and considerations involved in a variety of key transactions and other events that typically arise for a substantial private or public corporation. The topics to be considered include: share attributes and other 'corporate governance' matters affecting the organization of more complicated corporate entities, debt financings (including the preparation and negotiation of loan agreements and dealings with financial institutions generally), insolvencies and restructurings, amalgamations, reorganizations and other 'fundamental changes' and various aspects of corporate acquisitions. Emphasis would also be placed upon the role and responsibilities of lawyers involved in corporate organizations and transactions, taking into account potential ethical and conflict of interest considerations, and practices that a lawyer may or should adopt to reflect these considerations and to best serve the client's interests. (To be offered jointly with LAW-608.) Three term hours. PREREQUISITE: LAW 440 Business Associations

LAW-820* International Business Transactions
This course is designed to develop a framework that students can use to analyze and resolve issues relating to international business transactions. In order to achieve this objective, the course introduces students to the rules, practices and institutions which are relevant to international business transactions. Students will acquire an understanding of how legal tools can be used to manage risk in the international context. The course also provides the business background for common types of transactions and discusses the role that lawyers play in helping business people to fulfill their objectives. Throughout the course, students will have opportunities to apply the course material to practical problems. In terms of specific content, the course focuses on the strategies used by firms seeking to enter a new foreign market. After a discussion of the general business considerations, the main types of legal structures for market entry are discussed: the sale of goods and services, directly and through various distribution arrangements; direct investment, including joint ventures; technology and intellectual property licensing. (To be offered jointly with LAW-610.)

LAW-821* Comparative Constitutional Law
The Supreme Court increasingly refers to other legal systems in its constitutional decisions; at the same time, decisions such as R. v Oakes have been cited worldwide. This course examines the way other constitutional systems resolve constitutional questions we often deal with, in areas such as equality, fundamental freedoms, and the relationship between courts and legislatures. Beyond the exposure to other systems, the

exercise of comparison will naturally afford students a deeper understanding of our own constitutional law since the comparison highlights both the universal and the peculiar in the Canadian constitutional system. (To be offered jointly with LAW-232). Three credits. PREREQUISITE: permission of the instructor.

LAW-822* Human Rights

The Ontario human rights system has undergone significant changes in recent years. This course will examine the evolution of Ontario's human rights system as a mechanism for promoting and protecting human rights. It will also explore the meaning of discrimination with reference to recent cases from the Ontario Human Rights Tribunal. Particular attention will be paid to the interaction between the Charter and the Ontario Human Rights Code. The legal structure of Canadian human rights protection, its scope and its deficiencies, will be considered in depth. (To be offered jointly with LAW-522.) Three term hours.

LAW-823* Advanced Civil Procedure

This course will focus on the procedural subjects which are most commonly encountered in a civil litigation practice. Topics will include oral and documentary discovery, motions for summary judgment, injunction proceedings, class proceedings, trial practice and procedure, and appeals. The course will also examine the use of variety of alternate dispute resolution techniques to supplement or replace traditional civil procedure mechanisms. Two drafting assignments will be handed out during the course to provide the student with practical experience. (To be offered jointly with LAW-323.) PREREQUISITE LAW-Civil Procedure.

LAW-824* Comparative Federalism

A study of how different federal systems deal with similar problems. Although the Canadian and American systems form the basis for most comparisons, the course often examines other federations - Australia, Germany and Switzerland - and the institutions of 'near federations' such as the European Union. (To be offered jointly with LAW-424.)

LAW-825* International Refugee Law

This course examines the legal framework for refugee protection including a comprehensive analysis of the elements of the refugee definition in international law as well as refugee status determination procedures. Drawing on comparative jurisprudence of leading asylum countries, the course situates Canadian refugee law in its global context and encourages a critical appraisal of both state practice and international efforts to regulate and control asylum flows. The format of the course includes lectures as well as some in-class simulation exercises, small group discussion

of case studies and video screenings. (To be offered jointly with LAW-375.) Three term hours.

LAW-826* Sentencing & Imprisonment
This course will look primarily at three aspects of "Sentencing and Imprisonment": (1) The Principles of Sentencing: Philosophical and Empirical Perspectives; (2) The Law of Sentencing in Canada; and (3) Judicial Remedies for Convicted Persons. Time permitting, specific topics like Murder, Preventive Detention and Aboriginal Offenders will be looked at. The course will follow a lecture/discussion format. (To be offered jointly with LAW-416.) Three term hours.

LAW-827* Comparative Evidence
This course will explore the relationship between the rules of evidence and the procedural context in which they are situated. This will include an examination of the impact of lay participation and adversarial procedures on the law of evidence. Within this framework particular attention will be paid to issues such as relevance and weight, the presumption of innocence, prosecution and defence disclosure and exclusionary rules. Practices in a variety of jurisdictions (including the international courts) will be drawn on to illustrate the relationship between procedural context and the content and application of the rules of evidence with particular emphasis being placed on Canada and South Africa. PREREQUISITE LAW- Evidence. (To be offered jointly with LAW-678.)

LAW-828* Taxation of Trusts and Administration of Estates
Taxation of the estates of deceased persons and of testamentary and inter vivos trusts. Emphasis will be placed on the elections which may be made by executors to reduce the impact of taxation and upon the steps which may be taken in advance to minimize the tax costs of providing for surviving dependents. The course offers an introduction to personal tax planning, and will also cover such subjects as provision for retirement, tax deferral and techniques of estate freezing. (To be offered jointly with LAW-509.) PREREQUISITE: LAW-508 Taxation. LAW-440 Business Associations. LAW-462 Wills and Trusts recommended.

LAW-829* Advanced Constitutional Law
This seminar asks if recent jurisprudence under the Constitution Act, 1982, and especially under the Canadian Charter of Rights and Freedoms, enhances or marginalizes "rights talk". Has the original "rights and limits" approach which also manifested as "no rights are absolute" nevertheless changed with the invocation of new discourse about "no hierarchy of rights", "competing rights", "reconciling rights", accommodation, the duty to consult, and "contextual balancing"? We examine cases

involving religious minorities, gays and lesbians, women, aboriginal peoples, etc., to determine whether the new constitutionalism serves them well or badly. (To be offered jointly with LAW-529.) Three term hours.

LAW-830* Mental Health Law

The aim of this course is to explore the various facets of mental health law in the criminal and civil contexts, focusing on particular areas of concern as reflected in the case law. Mental illness poses unique difficulties for a legal system that is premised on self-determination and the rights of the individual, as the courts struggle to find a balance between the recognition of those rights and the necessity for assessment or intervention where decision-making capacity is imperiled. Those who suffer from mental illness also often face unique obstacles, as their illness frequently goes unrecognized, and may give rise to stigma and discrimination. Like many course designations, mental health law actually covers a broad range of legal categories and the cases are quite diverse. Throughout the course, a recurrent theme will be the protection of the rights of those who suffer from a mental illness, and the need to balance those rights against competing concerns about the need for treatment, public safety and other social interests. We review topics such as the civil committal process, capacity assessments, addictions, NCR findings, review board decisions, confidentiality, and the duty to warn. (To be offered jointly with LAW-403.) Three term hours.

LAW-831* Fiduciary Obligations

Fiduciary Obligation will explore the rapid escalation to its current prominent status in modern Canadian jurisprudence. The course will trace the concept from its ancient origins in Equity to its ubiquitous presence in all areas of commercial, corporate, private and governmental law. Commencing with a discussion of the concept itself, the course will endeavour to deal with several distinct areas where the relationships have as their underpinnings a fiduciary duty: agent (real estate, stock brokers, promoters), solicitor-client, corporate (directors, officers, employees), private (clergy, teachers, family), governmental (aboriginal affairs, elected officials), etc. The course will conclude with an in depth discussion of the remarkable remedial power where the duty of utmost good faith applies and the courts' use of such equity-based power. (To be offered jointly with LAW-552.) Three term hours.

LAW-832* Aboriginal Law

This course examines the legal and constitutional rights of Aboriginal peoples in Canada. It considers the legal legacy of Canada's colonial past – the implications, that is, for the present constitutional order of European settlement in territories that were occupied and governed by indigenous peoples. Much of the course focuses upon the interpretation of section 35 of the Constitutional Act, 1982, which entrenches 'existing

aboriginal and treaty rights'. Particular attention will therefore be given to Aboriginal rights to lands, natural resources, and self-government, as well as the identification and interpretation of Aboriginal treaty rights. In the course of addressing these topics, we will confront constitutional issues relating to federalism and human rights, theoretical issues relating to legal interpretation in a cross-cultural setting, comparisons with indigenous rights in other former colonies, and the status of indigenous peoples and rights under international law. The general purpose of the course, then, is to examine the possibilities and challenges associated with Canada's multi-national and legally-pluralist constitutional order from a variety of legal, cultural, and theoretical perspectives. (To be offered jointly with LAW-532.) Three term hours.

LAW-833* Law Gender Equality
Since law shapes women's lives, we need a "gender audit" of Canadian sex equality law and jurisprudence: what works and what has harmed women? In the 2012 fall term, this audit will focus mainly on women's claims of intersectional rights in a variety of legal contexts. Students will be asked to identify legal doctrines and advocacy strategies that feminist lawyers could invoke to litigate women's equality rights cases successfully. (To be offered jointly with LAW-533.) Three term hours.

LAW-834* Feminist Jurisprudence
The seminar will involve an in-depth exploration of contemporary gender theories and their implications for the resolution of problems of legal significance. The objective of the seminar is to develop a theory of gender justice which reflects the feminist perspective. (To be offered jointly with LAW-534.) PREREQUISITE: LAW-533 Law, Gender, Equality or LAW-516 Law and Sexuality or permission of the instructor.

LAW-835* Equality Rights & The Charter
This seminar examines equality rights jurisprudence under the Charter by asking whether the new "competing rights" analysis advances or limits the rights of equality-seekers. Since women argued strenuously for enhanced equality rights during the debates leading up to the adoption of the Charter, many but not all of the cases we review will involve women whether as equality-seekers or as objects of state protection. (To be offered jointly with LAW-535.) Three term hours.

LAW-836* Advanced Seminar on International Legal Problems
This seminar will examine situations in which a lawyer in private practice will have to take international law rules into account. Particular issues covered include diplomatic immunity, espousal of the claims of nationals, mass migrations and refugee claims, international terrorism and extradition requests. Current issues in international law will

be considered as well. (To be offered jointly with LAW-536.) PREREQUISITE: LAW-540 International Law or permission of instructor.

LAW-837* Evidence
What are the objectives and what is the structure and content of the law governing judicial proof? As part of an allegedly rational system, how far are the rules consistent in principle and how do they work together? The course covers the common law of evidence, both civil and criminal, as it has been affected by legislation. Specifically, matters to be discussed include competence and compellability of witnesses, rules relating to the examination of witnesses, corroboration, burdens of proof and presumptions, judicial notice, illegally obtained evidence, privilege, hearsay, character, opinion, documentary and real evidence. Some attention will be devoted to the impact of new scientific knowledge and fact-finding techniques upon the system of judicial proof. (To be jointly with LAW-320.) Four term hours.

LAW-838* International Environmental and Resource Law
International environmental and resource governance presents some of our most pressing current policy issues. This course will examine potential frameworks for resolution of international environmental and resource problems and the role for law and legal institutions. We will examine a variety of legal approaches, including treaty-based international law, customary international law, and rights-based environmental claims. We will also consider how international environmental and resource law intersect with other international legal regimes (GATT/WTO), the global activities of non-legal norm-setters, such as multinational enterprises, and consider how international and domestic law relate within this field. (To be offered jointly with LAW-538.) Three term hours.

LAW-839* Project Management for Lawyers
This course introduces the principles and practice of project management systems applicable to law offices, including implementation of alternative fee arrangements. The course examines worldwide best practices, including involving clients in project management while still meeting lawyers' professional obligations. Students will learn through case studies and interactive simulations. Not offered 2018-19.
Pre- or Co-Requisites: LAW-849*, Financial Literacy for Lawyers; LAW- 844*, Fundamentals of Legal Services Business
EXCLUSION: LSM-839*

LAW-840* Business Associations
The course is a study of the establishment and operation of business organizations,

including partnerships and closely and widely-held corporations. The nature of capital and corporate securities, and the formation of companies including the transfer of a business, will be considered. The consequences of carrying on business in the corporate form, including the liability of a corporation for the conduct of its agents and controllers will be examined. A major portion of the course will be taken up by a consideration of the powers, duties and liabilities of directors, officers and controlling shareholders, corporate responsibility and the rights of minority shareholders and other stakeholders, and the remedies of dissenters in a corporation. (To be offered jointly with LAW-440.) Four term hours.

LAW-841* Contested Transactions

This course will examine and analyze the legal and tactical issues involving Canadian contested change of control transactions primarily from the perspective of a target company. The course will focus on corporate and securities law issues relating to hostile take-over bids and proxy contests, including issues being currently debated and that are critical to a firm understanding of the topic. It is intended that students will develop practical skills that are critical for a successful practice as a business lawyer. Seminars include classroom lectures, guest lectures, problem-solving and in-class negotiations. (To be offered jointly with LAW-280.) Three term hours.

LAW-842* International Human Rights Law

This seminar will provide an overview of the international system for the protection of human and peoples' rights. The course will begin with a critical survey of the history of public international law generally. Subsequent seminars will examine the treaties, procedures and institutions that have evolved to advance rights at the international and regional levels. Some of the particularly challenging dimensions of international human rights law will be explored, including efforts to bridge the public/private divide, questions of cultural relativism, the role of prosecutions versus truth commissions in post-conflict societies, the ethics and legality of humanitarian intervention; and the capacity of international law to promote corporate accountability in a globalized world. Overarching questions which animate the seminar include: to what extent has international human rights law challenged traditional conceptions of state sovereignty? Has international human rights law delivered on its promises of justice and equality? How might international human rights law and practice be re-imagined/ reformulated? (To be offered jointly with LAW-542.) Three term-hours.

LAW-843* Insurance

The course prompts an examination of fundamental issues in insurance law in a prescriptive way, relevant to today's lawyers. Insurance law is really a melding of contract principles with tort claims and so necessarily draws on the analytical

foundation from both major areas of law. Really, insurance law is often about seeking compensation for a person in the wrong place at the wrong time. This course will focus on insurance arising from motor vehicle accidents. We will address the SABS (Statutory Accident Benefits Schedule), definition of Catastrophic Impairment, collateral benefits, available of various heads of damages, and the threshold. This course aims to provide a working knowledge of the terminology and doctrine in a variety of insurance law spheres: automobile, liability, property, life, health and disability insurance. However, particular emphasis is placed on auto insurance. (To be offered jointly with LAW-443.) Three term hours.

LAW-844* Fundamentals of Legal Services Business
This course introduces core concepts of business theory and practice as they apply to legal services. The course will cover topics such as strategy, marketing, sales, operations, business development, and the effects of professional regulation of legal services provision. Course content includes a mix of theory and application through the use of case studies. Not offered 2018-19.
EXCLUSION: LSM-844*

LAW-845* Creditors' Remedies: Enforcement and Bankruptcy Law
Monetary obligations, including debts for borrowed money, the payment of the price of goods or services, the award of damages for breach of legal duties or the imposition of fines, are central to commerce and the enforcement of almost all obligations in our legal system. The effective enforcement of these debts is fundamental to the rule of law. This course will explore such enforcement when the obligor either does not or cannot pay the debt. Remedies available to judgment creditors and to secured and unsecured creditors against a defaulting debtor and the rights and obligations of both creditors and debtors in those processes will be explored. The course includes the enforcement of judgments and a summary introduction to secured lending transactions. The basic principles of personal and corporate bankruptcy, including the public policies advanced by the bankruptcy process, preferences and debtor rehabilitation and discharge, are presented. The course addresses priorities among creditors, including tax claims by the state. The restructuring of insolvent businesses using proposals under the Bankruptcy and Insolvency Act or plans of arrangement under the Companies Creditors Arrangement Act is introduced. Professional ethics issues in these matters will be addressed. (To be offered jointly with LAW-445.) Three term hours.

LAW-846* Competition Law
Competition law promises to be a fundamental government tool of business discipline in the global economy of the 21st century. This course examines the fundamentals of Canadian competition law, including its rationales, constitutional roots, enforcement

mechanisms, as well as substantive provisions of the Competition Act. Among other hot topics, we will also examine the implementation of the amendments introduced by the Budget Implementation Act, 2009 ("Bill C-10"). (To be offered jointly with LAW-446.) Three term hours.

LAW-847* Advanced International Trade and Investment Law
An advanced international trade and investment law course, which will examine the substantive principles (and their procedural underpinnings in domestic law) of NAFTA , the new GATT/World Trade Organization, the World Bank's ICSID system to the extent that it is relevant under NAFTA, and other related instruments designed to maintain a liberal trading regime providing freer market access and non-discriminatory foreign investment practices. (To be offered jointly with LAW-547.)
PREREQUISITE: LAW-540 International Law; LAW-454 International Economic Law or permission of the instructor.

LAW-848* Securities Regulation
This course examines the regulation of the Canadian capital markets. The course focuses on a number of specific issues such as disclosure obligations, the exempt market, public offerings, registration, self-regulatory organizations and enforcement issues. The course will examine the regulation pertaining to certain acquisition transactions such as take-over bids and going-private transactions. A main objective of the course will be to analyze the legislation and relevant case law with a view to developing an understanding of the rationale underlying securities law. A further focus of the course will be to discuss the law from a critical perspective to discern areas in which the regulation may be improved. (To be offered jointly with LAW-448.) Three term hours. PREREQUISITE OR COREQUISITE: LAW-440 Business Associations

LAW-849* Financial Literacy for Lawyers
This course introduces concepts of financial literacy to equip students and legal professionals for successful interactions with business clients and legal practice management. The course is not intended to make students into tax or accounting professionals. It focuses on basic financial accounting techniques, construction and understanding of financial statements, financial statement analysis tools, valuation of assets, tax implications of different legal services delivery mechanisms, and financial accounting and management issues as they relate to professional services firms. This is an online course. Not offered 2018-19.
EXCLUSIONS: LSM-849*; Students who have taken MBAS-811 or MBUS-811 for credit will not be able to take this course for credit.

LAW-850* Shaping the Future of Legal Practice
This course explores the economic, political, technological, and demographic forces that are disrupting the traditional modes of delivery of legal services. In the context of these disruptive forces, the course will examine the theory and practice of entrepreneurship and innovation in the context of a professional services firm. Finally, the course will explore how the legal profession can take advantage of changes in the delivery of legal services to improve access to justice for all. This is an online course. Not offered 2018-19. EXCLUSION: LSM-850*

LAW-851* Trademark & Unfair Competition
This course examines the law of private remedies for the protection of 'trade identity' conferred by the exclusive right to use a mark to indicate the source of a product or service, as well as for related intangibles of commercial value. The focus is on the federal Trademarks Act and its impact on private rights to regulate the use of trademarks, tradenames and unfair competitive practices. Students will learn how the common law regulation of unfair competition (the tort of passing off) complements the statutory protections afforded for brands and logos that now dominate modern consumer culture. Some attention is given to theoretical justifications and normative frameworks for trade-mark protection; public policy objectives; the basis for making a trademark application and grounds for opposition, distinctiveness and use; infringement; title; the relationship to the law of trade-names under common law and federal and provincial incorporation statutes; and international obligations to which Canadian law must conform, notably through the Paris Convention and Trade Related Aspects of Intellectual Property Agreement. Students learn how the interests of stakeholders, from the desire to prevent free-riding to the promotion of free competition and free expression to the consumer and public interest in protecting the integrity of trade in wares and services from confusion, have played out under Canadian law. (To be offered jointly with LAW-451.) Three term hours.

LAW-852* Commercial Law
This course covers domestic and international commercial sales transactions. It considers in detail the law applicable to domestic sales of goods (in particular the Ontario Sale of Goods Act) and the international instruments that govern cross-border commercial transactions. It also provides an introduction to related issues, including the delivery of goods, passage of risk, and payment systems. (To be offered jointly with LAW-441.) Three term hours.

LAW-853* Law and Poverty
This course will be about homelessness and, to a lesser extent, housing. We will consider the sociology of homeless and we will ask why it is bad and why it is wrong

(and if those two are different). Then we will consider various legal and policy routes to addressing homelessness, with an eye to both their effectiveness and to their aptness as responses to the wrongness of homelessness. Some things we may talk about include: subsidized housing legislation, shelters, and recent attempts to establish a Charter right to housing. Evaluation will be by paper and by class participation/presentation. (To be offered jointly with LAW-303.) Three term hours.

LAW-854* International Economic Law
With the rise of globalization, international laws governing how nations trade and invest across borders are increasingly important. These laws limit government actions and affect the daily lives of people around the world. This course introduces international trade and investments laws. We will focus on the trade laws of the WTO and the investment provisions of Chapter 11 of the NAFTA. The course addresses the application of these laws in key cases and critically examines the principles underlying them. (To be offered jointly with LAW-454.) Three term hours.

LAW-855* Fundamental Issues in Corporate Governance
This course examines the governance of public corporations, focusing on issues such as corporate ownership and control, the structure and function of the board of directors, agency theory and associated justifications of shareholder primacy, labour participation in corporate governance and corporate social responsibility. Although the focus will be on Canadian law, relevant comparisons will be drawn with developments in other jurisdictions such as the UK, the USA and Europe which offer deeper insight into the Canadian debates. (To be offered jointly with LAW-602.) Three term hours.

LAW-856* Entertainment Law
This course will address the fundamentals of entertainment law, from a theoretical and applied perspective. It will consider the topic from its foundation as a particular application of the law of contract, to an examination of practical issues and approaches that arise in this specialized area of practice. (To be offered jointly with LAW-326.)

LAW-857* International Commercial Arbitration
Arbitration is an alternative to litigation that has emerged as a major means of dispute resolution in the area of international trade and commerce between both private and government entities. This course will cover the essential features of international commercial arbitration, with particular emphasis on the development of the law in Canada. On successful completion of this course, students should: understand the nature of arbitration as a form of dispute resolution and its advantages and disadvantages relative to litigation, in international commercial disputes; be aware of the legal and procedural regime for arbitration in Canada and its similarity with the

laws of other countries; be familiar with the procedures of some of the major international arbitral institutions; and understand the relationship between domestic courts and arbitration and the growing autonomy of the arbitral process. (To be offered jointly with LAW-612.) Offered in the International Law Spring Program at the B.I.S.C.

LAW-858* Media, Government and the Charter

This course will explore, in the context of Canadian major media and the Charter, a number of ways in which Canadian legislatures have placed limits on expressive freedom with a view to achieving public policy ends. What are these limits, and what policy interests do they serve? How have our legislatures, our courts, and our media tried to reconcile values of expressive freedom, personal privacy, fair trial rights, commercial free speech, and related values, and to what extent are the results consistent with the Charter? We will also explore certain defamation issues; the interaction between copyright and expressive freedom; and calls for limitations on media concentration of ownership. There will be substantial emphasis on decisions of the Supreme Court of Canada, and on the strengths and weaknesses of the conceptual framework brought by the Supreme Court to its analysis of section 2 (b) of the Charter. (To be offered jointly with LAW-675.)

LAW-859* Miscarriages of Justice

This seminar is focused on emerging problems related to miscarriages of justice in Canadian criminal law. In the wake of famous cases such as Marshall, Milgaard, Morin and Sophonow, we explore the systemic causes of wrongful convictions in Canada. The suggested primary causes of wrongful convictions are examined, including police misconduct in the investigative process (with special emphasis on interrogation tactics); prosecutorial misconduct; ineffective assistance of counsel and its relation to wrongful conviction; and fallibility of professional and lay decision-makers in the process. The role of the media in uncovering or "creating" wrongful convictions is given separate consideration. Traditional institutional responses to wrongful convictions are evaluated, such as the efficacy of appellate review, Ministerial reviews under s.690, Royal Prerogative of Mercy, commissions of inquiry and the possibility of an independent tribunal designed and created to address wrongful convictions (as is the case in England with the Criminal Cases Review Commission). (To be offered jointly with LAW-679.)

LAW-860* Land Transactions

Real estate represents the single greatest source of wealth for Canadians and Canadian businesses. It is complex with long standing historical roots. We will examine the agreement of purchase and sale which is the foundation of every real estate transaction,

when is it enforceable, what should be in it, how it should be drafted and why, when to use conditions, promises or representations, how it is completed and what remedies are available for its breach. Other issues which will be examined include the land registration system, real estate agents duties, mortgages and other security, mortgage remedies, easements, title insurance, Planning Act, fraud and solicitor's opinions. Relevant caselaw will be reviewed. (To be offered jointly with LAW-460.) Three term hours.

LAW-861* Working with Teams and Managing People
This course provides students with knowledge and tools to lead and engage teams in legal professional environments, where teams include staff, other lawyers, other professional advisors, and clients. Students will learn through case studies and simulations how to build and manage effective teams, best practices for managing change within organizations, and responses to internal and external challenges. Not offered 2018-19.
Pre- or Co-Requisites: LAW-849*, Financial Literacy for Lawyers; LAW- 844*, Fundamentals of Legal Services Business
EXCLUSION: LSM-861*

LAW-862* Collective Agreement and Arbitration
The collective agreement establishes the legal framework that governs the ongoing relationship between the employer, the union, and the unionized workforce. Grievance arbitration is the special mechanism that provides for the enforcement of this framework. This course examines some of the most important areas of arbitral jurisprudence and the main areas of interface between the arbitral process and the general legal process. Examples of topics to be covered are discipline and discharge, seniority, management rights, the remedial powers of arbitrators, the impact of external legislation, and evidentiary and procedural issues. (To be offered jointly with LAW-562.) Three term hours. PREREQUISITE: LAW-560 Labour Law

LAW-863* Trust
The institution of the trust, involving the separation of the control (in trustees) from the beneficial enjoyment of property, is of foundational importance in our law. Trusts concepts and devices are employed in a variety of modern contexts and are also increasingly used in commercial transactions. This course will cover basic doctrine and explore selected areas in further detail: for example, the nature of a trust; formal requirements of trusts; constitution of trusts; secret trusts; trusts, powers and purposes; certainties; property-holding by unincorporated associations; trusts for charitable purposes; some aspects of trustees' powers and duties; variation of trusts; resulting and constructive trusts. (To be offered jointly with LAW-463.) Three term hours.

LAW-864* Municipal Law
This course examines the structure, powers and functions of local government institutions in Canada. Among the particular questions to be examined are: What is the place of municipalities in the Canadian constitutional order? How are municipalities formed and how are their boundaries altered?How do municipalities address issues that have a regional scope? What are the mechanisms of land use control?The judicial, legislative and administrative responses to these questions will be examined in light of normative debates about the nature and purposes of local government regulation. (To be offered jointly with LAW-465).

LAW-865* Comparative Labour Law
Through a study of some of the major differences between the Canadian and Western European systems of labour law and industrial relations, this course attempts to encourage a broader and more critical understanding of the Canadian system. (To be offered jointly with LAW-565.) PREREQUISITE: LAW-560 Labour Law or permission of the instructor.

LAW-866* Industrial Dispute Law
This course will examine selected human rights issues in the contemporary workplace. The class will challenge students to reflect on the normative aspirations of Canada's workplace human rights regime, while learning to identify key human rights issues confronting Canadian workplaces and to craft practical approaches for dealing with them within the Canadian legal system. This year, special focus issues will include (1) gender identity and gender expression, the newest grounds added to Ontario's Human Rights Code; (2) the role of human rights codes in addressing workplace issues for temporary foreign workers and recent immigrants; and (3) reconciling competing human rights claims in the workplace. The class will also explore adjudication processes for workplace human rights issues, and examine the complex relationship between human rights tribunals and labour arbitrators in various jurisdictions across Canada. The seminar format will provide a flexible blend of directed class discussion, guest speakers and student engagement. Students will be evaluated based on participation (20%), a class presentation (20%) and an 18-20 page paper (60%). (To be offered jointly with LAW-566.) Three term hours. PRE-REQUISITE: At least one of LAW 560 Labour, LAW 567 Employment Law, LAW 522 Human Rights or LAW 542 International Human Rights. Students with relevant background courses acquired outside the law school may also be admitted with the permission of the instructor.

LAW-867* Employment Law
The Supreme Court of Canada has acknowledged that the contract of employment is "unique", and governs a "special relationship" between the employer and the individual

non-unionized employee. This course will explore central issues and themes in employment law, and will focus on the following topics: 1) the formation of the employment contract; 2) employee or independent contractor?; 3) who is the employer?; 4) the impact of legislation upon the employment relationship (The course will focus on employment standards, pay equity, and human rights legislation); 5) termination of the employment relationship including wrongful dismissal, just cause termination; 6) the rights and remedies available to employees (including a comparison of the federal statutory regime with the provincial regime). If time permits, there will be a discussion of issues pertaining to employees with disabilities including a discussion of the workers' compensation and occupational health and safety legislative regimes. (To be offered jointly with LAW-567.) Three term hours.

LAW-868* Copyright Law

Why should you care about Copyright law? Most aspects of our culture and communication are affected by the law of copyright, from the entertainment we consume or contribute to, to the buildings we live in, to our written and visual exchanges, and our use of the internet, copyright is an integral part of our lives and affects how we as a society elate, educate, create, earn a living, or simply participate in meaning making through the exercise of our freedom of expression. The year 2012 was a turning point in Canadian copyright law with significant legislative reforms and five Supreme Court of Canada decisions (the "pentalogy") that will shape the trajectory of Canadian law for years to come. The Copyright Act extends a limited term of protection to original literary, dramatic, musical and artistic works as well as neighbouring rights in a performer's performance, a maker's sound recording, and a broadcaster's of communication signal. This course provides a brief introduction to the field of intellectual property in order to situate copyright in the policy framework of industrial and cultural property. The theoretical rationales for and judicial understanding of the role and function of copyright are explored as means for examining the continued debates about the appropriate scope of rights, the need for limits, and the goal of "balance" to be given effect by copyright law and policy. The course is focused on two main issues: copyright subsistence and infringement, taking into consideration the difference between authorship and ownership, moral rights and economic rights, nature and extent of rights and the allowable exceptions, defences, and remedies (criminal and civil). How should copyright law evolve in the face of major technological shifts? We will also consider some of the legal means by which copyright is made to expand or contract in accordance with policy, through the use of internal doctrinal mechanisms such as the expression/idea dichotomy, the merger of expression with ideas, the allowable use of stock devices, and the freedom of users to deal fairly with copyrighted works, as with the new user generated content exception, all of which may give more or less effect to the public interest in expressive freedom and a vibrant public domain.

Copyright theory will be tested against its application, with some attention to international aspects of protection for the impact on domestic law reform, including the new legal characterization of tampering with digital locks and technological protection measures as infringement. The big question we seek to answer in all instances is: have we got the "balance" right? (To be offered jointly with LAW-468.)

LAW-869* Advanced Intellectual Property

This seminar will consider recent topics of controversy and political debate in the field of intellectual property and the protection of knowledge goods. The purpose of this course is to provide students with the opportunity to critically examine some of the normative and theoretical underpinnings for legally protecting intellectual contributions and to foster an understanding of how these rationales play out in terms of politics, policy development, and legal doctrine in specific substantive areas. These insights are relevant to the selected special topics that focus on the relationship of intellectual property protection with culture, communication, development, trade, human rights, and the tension between national objectives and international obligations. Students are expected to have some basic substantive knowledge in at least one area of intellectual property law and to be eager to critically engage with advanced "fringe" issues of IP. Topics vary from year to year but may include copyright protection for oral works and folklore, the use of intellectual property to protect traditional and indigenous knowledge, biodiversity, biopiracy, and biocolonialism, the politics of property in the human genome and the patenting of life, the growing anti-competitive uses of intellectual property and proliferation of "bad patents", farmer's rights to save seeds, the trade related aspects of intellectual property and implications of expanding IPRs, trademark protection for geographic appellations, the special status of famous marks, and the effects of property fundamentalism on the promotion of progress in science and the useful arts. (To be offered jointly with LAW-469.) Three term hours.

LAW-870* Advanced Health Law

Medicine, Drugs, and Biotechnology Law: The course this year will have a particular focus on the way that pharmaceutical product developments and technological innovation in the health care field are legally governed through private and public law. We will analyze drug liability and the regulation of the pharmaceutical industry's research, reporting and marketing; the regulation of human subject experimentation through international guidelines and research ethics boards; class actions; and the extent to which the state can limit medical and technological innovation. Research on broadly related topics such as the history of biomedical experimentation, the linking of health and human rights, and the regulation of reproductive and genetic technologies will be possible within this course. (To be offered jointly with LAW-556.)

LAW-871* Immigration and Refugee Law
This course will provide an overview of the theoretical, historical, constitutional and policy underpinnings of Canadian immigration law. We will consider the legislative reforms implemented in the Immigration and Refugee Protection Act across the full range of immigrant and refugee categories. Key jurisprudence as well as critical and comparative perspectives will be considered throughout the course. (To be offered jointly with LAW-471.) Three term hours.

LAW-872* International Financial Regulation
The twentieth century saw a rise in the creation of global or multinational econo-financial structures intended to govern or regulate econo-financial relations between nations. These include, among others, the International Monetary fund (IMF); the IBRD or World Bank, the European Community; and the various bodies of the United Nations such as the United Nations Conference on International Trade Law (UNCITRAL). There has also been a growth of global non-state structures or organizations such as the International Swap Dealers Association (ISDA) and the International Organization of Securities Commissions (IOSCO) that provide guidelines for its members. These efforts towards the international or global regulation of interstate econo-financial activity has given rise to a number of legal regimes or bodies of law that regulate international financial activity. The course, International Financial Regulation, will examine some of these legal regimes, and how they affect international financial transactions. Topics to be discussed include, the 1) Law of Electronic Funds Transfers; 2) Law of Swap Transactions; 3) Financing of International Trade; and 4) Law governing international or offshore bank deposit transactions. (To be offered jointly with LAW-544.)

LAW-873* Corporate Taxation
This is a transactional course which takes the students into the complexities of corporate and other business transactions. It will focus on corporate income taxation, but it will also cover partnership and trust taxation as alternative approaches to tax planning. Some attention will be paid to value-added and sales taxation, given the forthcoming federal reforms in sales taxation. (To be offered jointly with LAW-511.) Three term-hours.
PREREQUISITE: LAW-508 Taxation; LAW-440 Business Associations recommended.

LAW-874* Family Law
An introductory course concerning the basic principles governing the formation, operation and dissolution of the family in Canada. Specific topics to be considered are validity and annulment of marriage, rights and obligations of persons who cohabit outside marriage, gay and lesbian relationships, domestic contracts, domestic violence,

support, custody and access to children, the law of divorce and ownership, possession and division of matrimonial property. Most attention will be paid to the law applicable in Ontario, but where appropriate, references and comparisons may be made to developments in other provinces and countries. There is substantial similarity in the family law of Canada's common law jurisdictions. The primary focus of the course will be upon substantive legal principles, as developed by the legislatures and courts. Consideration will also be given to a variety of tactical, ethical, procedural and evidentiary issues as well as to questions of law reform. Tax implications of some situations will be discussed, but no background in this area is necessary. The psychological dynamics of matrimonial disputes will receive some attention as well. (To be offered jointly with LAW-520.) Four term hours.

LAW-875* Advanced Family Law I

The seminar will allow students to research a Family Law or Children's Law issue that is of particular interest to them. During the first few weeks, while students are conducting research for their presentations and papers, the instructor will make presentations and lead discussion on international and transnational aspects of family law. Following this initial set of classes, students will present and discuss their research with the class. (To be offered jointly with LAW-525.) Three term hours.
PREREQUISITE: LAW-520 Family Law.

LAW-876* Children's Law

The course deals with a number of related issues concerning the treatment of children and adolescents in the legal system. Tactical, ethical and policy questions are addressed, as well as substantive and procedural legal topics. We will also explore the role of lawyers in a variety of proceedings affecting children and adolescents. While the primary focus of the course is legal and process oriented, the legal issues must be seen in a multi-disciplinary context, as is reflected in the reading materials and the range of professionals who will visit the class as speakers. Lawyers, judges, social workers, probation officers, youth workers and others will be guest speakers. The major topics in the course are: (1) child welfare, including child abuse and neglect, focussing primarily on child protection proceedings, but also considering criminal law issues, such as those relating to child witnesses and corporal punishment; (2) adoption; (3) youth justice issues. Although all social and economic classes are affected by the issues raised in this course, many of the issues studied in this course tend to disproportionately affect those who are socially or economically disadvantaged in society, and, for example, issues of aboriginal status arise in each section of the course. This course may be of particular relevance to students with an interest in Criminal or Family Law, although some students take this course out of general interest. Many of the topics discussed are matters of considerable public controversy. (To be offered jointly with LAW-519.) Three

term hours. PREREQUISITE OR COREQUISITE: LAW-520 Family Law or permission of the instructor.

LAW-877* Information Privacy
This seminar focuses on the challenges of protecting information privacy against the threat of emerging technologies (such as biotechnology, internet communication technologies, information tracking technologies, biometrics, and surveillance technologies to name a few). Information has been central to the form and function of the knowledge economy and plays a vital role as between individuals and in relationship with the state, raising issues pertaining to its control, access, aggregation, storage, retrieval, use and dissemination. The new technologies operationally interrogate existing dominant conceptions of privacy and introduce fresh areas of private contestation that question the need for a coherent theoretical framework. This course will survey the mixed regulatory mechanisms available for protecting information privacy in Canadian law, ranging from constitutional to statutory and common law protections, and will examine how normative conceptual understandings (and their tradeoffs) mediate new technologies, civil liberties, democratic values, public policy, law and reform efforts. (To be offered jointly with LAW-617.) Three term hours.

LAW-878* Environmental Assessment Law
This advanced seminar provides a comprehensive examination of environmental assessment law, policy, and practice at both the federal and Ontario levels. Particular emphasis is placed on documentary and procedural requirements, and the course includes a mock environmental assessment proceeding. (To be offered jointly with LAW-518.)

LAW-879* Advanced Torts
This seminar will provide students with the opportunity to explore tort law in greater depth. There will be in-class discussion on timely public issues, and we will examine the new conceptions of duty and causation that are currently emerging from decisions of the Supreme Court of Canada. Standard areas covered are defamation, class actions, vicarious liability, ex turpi causa, liability of public authorities, and the use of negligence as a mechanism for political change. We will also consider emerging actions in tort law relating to privacy and freedom of speech, along with novel duties in negligence such as negligent investigation and the duty to control the conduct of others. (To be offered jointly with LAW-339.) Three term hours.

LAW-880* Legal Research Methods & Perspectives
This seminar surveys the different theories and perspectives that inform current legal scholarship, and the range of research methods that can be applied to legal questions.

Through readings, class discussions, and guest presentations, students will become familiar with the variety of research perspectives and methods, and will learn how to apply that knowledge to their own thesis research.

LAW-881* Advanced Legal Research
This mandatory Graduate Seminar will develop the research and writing skills of students. Students will be required in this course to give presentations related to their Graduate Research Project in progress. (To be offered jointly with LAW-321.) Three term hours.

LAW-882* Legal Education & Pedagogy Seminar
This optional Graduate Seminar will consider issues in legal education and pedagogy. There will be presentations by invited faculty members. Using materials, problems and simulated exercises, graduate students will develop skills in teaching law to both large classes and small seminars. Priority for enrollment will be given to LL.M. students, but a limited number of J.D. students may be admitted. (To be offered jointly with LAW-382).

LAW-883* Social Science Research Methods Seminar
This optional Graduate Seminar will consider how legal scholars, lawyers and judges use social science research. As the study of law and growth of legal scholarship becomes more inter-disciplinary and cross-disciplinary, the need to deal with social science material is increasing. This course will have a mandatory component designed to teach students how to read, understand and work with the results of social science methodologies. There will also be an optional component which will give students an opportunity to learn how to use basic statistical methods. Priority for enrollment will be given to LL.M. students, but a limited number of J.D. students may be admitted. (To be offered jointly with LAW-383).

LAW-884* Graduate Individual Supervised Project (GISP)
Under faculty supervision, a student may be permitted to undertake an independent study. The nature of the work is to be agreed upon between the faculty supervisor and the student, but it will usually involve a significant written project (25-35 pages) or several shorter pieces of writing; The topic of this study may be a topic related to a graduate student's thesis or Graduate Research Project, but it may not duplicate that project. Graduate students may do more than one GISP.

LAW-885* Private Law Theory
This seminar will explore selected topics in the theory of the private law. Private law theory is concerned with explaining the nature and basis of the rights and obligations

that issue from the law of contract, tort, restitution, and property. (To be offered jointly with LAW-315.) Three term-hours.

LAW-886* Conflict of Laws

Every civil litigator and private law solicitor should take this theoretically rich and practically useful course. "Conflict of laws" is the collective term given to rules that regulate foreign-ness in private disputes. Conflicts arise in every case that involves more than one province or more than one state. In particular, we will consider the rules that govern: (1) which court has jurisdiction to decide a dispute; (2) whether a foreign judgment will be recognized and enforced and, alternatively, whether a foreign proceeding can be restrained; and (3) which law applies to the merits of the dispute. Examples will be drawn from all areas of private law, including torts, contracts, property, succession, and family law. (To be offered jointly with LAW-550.) Three term hours.

LAW-887* Patent Law

Patents are essential to the protection of innovation in many industrial sectors including manufacturing, pharmaceuticals, aerospace and information and technology. A number of international and bilateral agreements seek to “harmonize” the patent protection available worldwide. Nations become signatories to such agreements, in part, in an effort to attract capital and jobs. This course will provide an overview of the Canadian law of patents for invention. We will review the historical development of patents for invention, briefly discuss the interrelationship between patents and other branches of Canadian IP law such as trade secrets, industrial designs, integrated circuit topographies, plant breeder's rights, copyrights and trade-marks and consider the formalities of filing a patent application in Canada. We will explore the basic principles of the patent system in Canada, namely patentable subject matter, novelty, inventive step, utility and sufficiency of the patent specification and discuss the various mechanisms for modifying a granted patent. We will study the enforcement of one's rights, whether by action for infringement, by licence and assignment or by the Notice of Compliance regime in place for pharmaceutical products. Finally, we will briefly contrast differences in the patent procurement and enforcement schemes in place in the United States, Europe and Japan with those of Canada, as well as anticipated developments in patent law in the future, to the extent that time permits. (To be offered jointly with LAW-447.) Three term hours.

LAW-888* Administrative Law

FALL SESSION: This course will provide an introductory overview of administrative law - which principally concerns the legal regulation and judicial supervision of the executive branch of government. The course will examine issues such as the content of

procedural fairness, substantive compliance with statutory mandates, and the dilemmas associated with the judicial review of discretionary decision making, all in the context of a broad range of substantive areas of law including labour relations, municipal planning and zoning, constitutional, environmental, immigration, banking, and securities law, among others. The appropriate relationship between courts and administrative tribunals and officers is an overarching concern. Students will develop an understanding of the executive and administrative processes of government and will appreciate some of the design or structural problems in creating a system of public interest decision-making which is efficient and effective while recognizing valued individual interests and rights. WINTER SESSION: The primary focus of the course will be on the relationship between the courts and the executive and administrative branches of government; and on the role of judicial review of administrative action in the Canadian constitutional and governmental framework. In this context, the course will examine in detail the major bases for judicial review of administrative action - ultra vires action, jurisdictional error, abuse of discretion, error of law and procedural unfairness. As well, the various remedies, both common law and statutory, for unlawful administrative action will be considered. It is also the intention that, from the cases and other materials studied, the student will develop a better understanding of the executive and administrative processes and will appreciate some of the design or structural problems in creating a system of public interest decision-making which is efficient and effective and which recognizes and gives scope for valued individual interests and concerns. (To be offered jointly with LAW-427.) Four term hours.

LAW-889* Business Finance

This seminar will examine the public interest and the lawyer's role in assisting an enterprise to raise money to finance its existing or proposed activities. The legal entity or entities which may be used to carry on the enterprise and raise the money, whether an individual, partnership, private corporation, public corporation, not-for-profit corporation, co-operative, trust or combination of entities, and the consideration to be given in exchange for the money, will be reviewed. Sources of money, including family, friends, community, governments, fourth pillars, angels, venture capitalists, mutual funds, pension funds, banks, insurance companies and other financial institutions, and the manner in which investments by them may be structured and regulated, will be analyzed through seminar presentations. The seminar will include both theoretical review and the application of theory to case studies. Seminars will include introductory lectures (it is assumed students do not have undergraduate degrees in business or finance), and student-led presentations and discussions of third party materials and their own work. (To be offered jointly with LAW-512.) Three term hours.
PRE-REQUISITES: LAW-440 Business Associations AND LAW-448 Securities Regulation

LAW-890* International Labour Law

The course focuses on international labour law as a response to globalization. It will introduce students to the main legal and policy issues surrounding labour law in the international context. Topics will include the multilateral system of workers' rights (the International Labour Organization and international human rights conventions), regional systems of worker rights (the European Union, the NAFTA), the relationship between labour standards and international trade law, and corporate social responsibility and codes of conduct as alternatives to international legal regulation of work. (To be offered jointly with LAW-559.) Three term hours.

LAW-891* Law and Economics

Law and Economics has become a highly influential lens through which law is conceptualized and analyzed. Economic analysis provide one means of critically examining the way that law functions and thinking about how we might want to design laws to better achieve the social objectives that underpin them. This course will involve both study and critique of the law and economics approach. The course will introduce students to the central tools and concepts of law and economics. We will begin with a brief introduction to some basic economic theory and move on to study the application of law and economics analysis to particular problems in a variety of substantive legal domains. Applications in the area of property, tort, criminal, environmental law, equality rights, and operation of the legal system, among other substantive domains, will be considered. (To be offered jointly with LAW-328). Three term hours.

LAW-892* Legislation & Statutory Interpretation

Statutes are a very important source of law. Nevertheless, in the study of law, we spend much more time learning about cases and seeking to understand judging than reading legislative debates and seeking to understand legislating. This course explores several topics concerning legislatures and statutory interpretation. We will start with a discussion of the ideas of democracy, constitutionalism, deliberation, and interpretation. We will then explore the dialogue between courts and legislatures. In the last part of the course, we will explore some practical implications of our theoretical analysis, in the field of statutory interpretation, which would be useful for lawyers-to-be. For example: How shall we interpret statutes? Based on their text? Their purpose? The intention of the legislators? The first part of the course involves lectures on the legislative process, on the various concepts required for the study of legislatures, and on statutory interpretation. The second part includes presentations by students of their paper idea, work in progress, or draft paper (depending on how much progress they have made on the paper by the time of their presentation.) The presentation will be fail safe and will not count if the paper's grade is higher than the presentation grade. (To be offered jointly with LAW-222.) Three term hours.

LAW-893* Law and Philosophy
This seminar in general jurisprudence explores the foundations of law. Students will have the opportunity to participate in a wide range of jurisprudential discussions, drawing on moral and political philosophy. The syllabus includes coverage of persistent foundational questions in the philosophy of law, which may include: community, justice, rights, authority, positive law, obligation, and their interrelationships. This seminar complements LAW310 Jurisprudence, but that course is not a prerequisite and no prior philosophical training is required. (To be offered jointly with LAW-309). Three term hours.

LAW-894* Advanced Issues in Contract Law
Contracts and the law that governs them are fundamental to economic life in our society, and there is scarcely an area of legal practice in which issues of contract law do not figure. The first-year course in Contracts provides students with an excellent grounding in the subject. Advanced Contract Law builds on the foundations laid in first year, broadening and deepening the student's knowledge of this richly-textured subject. The course will cover a selection of advanced issues in contract law that cannot be dealt with in any detail in a first course in the subject. Examples of topics that may be covered in any given year include: illegality; agency; assignment; contractual construction; good faith; implied terms; paternalism and the problem of standard forms; unconscionability; economic duress; the interaction of contract with tort and restitution; the estoppels (equitable; conventional; in pais; proprietary). The course will be structured around readings drawn primarily from cases decided by common law courts here and abroad, and also from the scholarly literature. (To be offered jointly with LAW-458.) Three term hours. PREREQUISITE: Students may enrol in Advanced Issues in Contract Law only if they have successfully completed first-year courses in Torts, Property, and Contract Law.

LAW-895* Wills and Estate Planning
An introduction to the basic tools of property disposition and management. The first part of the course will focus on the alternatives to testate succession such as gifting, inter-vivos trusts, life insurance, intestate succession, etc. The second part of the course will concentrate on testate succession and various doctrines applicable to wills. Topics such as testamentary capacity, due execution, revocation, various types of beneficiaries, etc. will be considered. The third part of the course will deal with administration of trusts and estates. Such topics as fiduciary duties, even-handedness between beneficiaries, accumulations, etc. will be considered. The course will also deal with taxation issues with respect to the various aspects of estate planning. (To be offered jointly with LAW-462.) Three term hours.

LAW-896* Criminal Procedure
Procedural dimensions of the criminal justice system are critically examined. The pervasive impact of the Charter is fully integrated and assessed. The pre-trial section includes police power to search and arrest, legal and illegal police discretion, show cause hearings (bail), the right to counsel, prosecutional powers and discretion and plea bargaining. Trial topics are jurisdiction, election, formal objections, joint trials, pleas, the doctrine of included offences, double jeopardy, preliminary inquiries, direct indictment, discovery and the unique features of trial by jury. At the post-trial stage, sentence and appellate options and the prerogative writs are briefly explored. (To be offered jointly with LAW-404.) Four term hours.

LAW-897 Graduate Paper
Graduate Paper (35-40 pages in length – about 9,000-10,000 words) under the supervision of a faculty member on a topic to be mutually agreed.

LAW-898 Substantial Graduate Research Project
Substantial Graduate Research Project (50 -70 pages in length – about 13,000-18,000 words) under the supervision of a faculty member, and normally within one of the advertised areas of Masters in Law Graduate Concentration. Upon completion, the student will submit the Research Project to a faculty evaluative Committee consisting of three members (including the supervisor).

LAW-899 Master's Thesis Research
A Masters Thesis (not to exceed 35,000 words) written under the supervision of a faculty member, and within one of the advertised areas of Masters in Law Graduate Concentration. Upon completion, the student will defend the thesis before a Committee of the School of Graduate Studies composed of the student's supervisor, a professor from Law and a second professor from Law or a professor from another department at Queen's and the Chair.

LAW-900* Public Health Law
Public Health Law has emerged recently as a distinct field, as the threat of contagious diseases such as SARS has grown with globalization, and as tobacco, food and drug-related illnesses, and the environment have been recognized as significant factors affecting human health. This course examines the role of law in promoting public health and its core value of social justice. Collective protections such as those found in the revised International Health Regulations will be examined in relation to individual rights, including rights to the benefits of such health promotion activities. By analyzing such questions as mandatory immunization, advertising limitations, compulsory disclosure of personal information, quarantine and the use of emergency powers to

counter biological warfare, the course explores the intersection of health, law and policy, provides a foundation of legal understanding of Canadian and global health law, and assesses the legal role in promoting the fair and equitable conditions necessary for public health. (To be offered jointly with LAW-304.) Three term hours.

LAW-901* Occupational Safety, Health and Workers' Compensation Law
Workplace health is a principal concern of industrial relations practice and generates considerable risk and liability for organizations. This course examines occupational safety and health (OSH) and workers' compensation law, policy, administration and compliance. With a focus on industrial relations practice, the course addresses the purpose, economic rationale, business value and human resource implications of how the state regulates health in the workplace. The course examines occupational safety and health and workers' compensation systems, addressing such issues as OSH standards, due diligence, prosecutions, workplace injury and disease (for example, cancers and SARS). (To be offered jointly with LAW-681.) Three term hours.

LAW-907* Law and Sexuality
This interdisciplinary seminar is will focus on the legal status and civil rights of lesbian women, gay men, and other sexual minorities in Canada and other countries. It will include a consideration of employment law, estate planning and property rights of lesbians and gays, domestic law relating to same-sex relationships and partnership benefits, violence against lesbians and gays, race, gender and discrimination/constitutional law. The emphasis in the seminar will be on the development of a multi- and interdisciplinary perspective on this area of study, and will employ traditional research resources as well as emerging computer resources in the collection of materials. The course will be suitable for non-law students who have an interest in the contemporary or historical status of lesbian women, gay men and other sexual minorities, and previous study of law will not be required for enrolment. (To be offered jointly with LAW-516.)

LAW-908* Constitutional Labour Law
This course will address several meeting points between constitutional law and labour law, particularly in the areas of equality rights, freedom of association, and positive rights. It would be of interest both to students interested in labour law and to students who wish to explore some constitutional law areas which are typically addressed in the first year constitutional law course. (To be offered jointly with LAW-233). Three credits. PREREQUISITE: permission of the instructor.

LAW-914* Graduate Legal Studies Forum I
The Graduate Legal Studies Forum aims to expose graduate students to a diverse range

of approaches to and topics in legal scholarship. Students will attend and participate in a minimum of eight seminars per term presented by visiting scholars and Queen's faculty. The class will also meet as a group with the course instructor two to three times per term. The Graduate Legal Studies Forum is designed to develop the students' skills as critical and reflective legal scholars. Emphasis will be placed on cultivating proficiency in rigorous scholarly criticism through written and oral engagement with cutting-edge legal scholarship. Students will develop in their appreciation for the methodological diversity of legal scholarship, in their ability to evaluate arguments by leading thinkers in a variety of legal disciplines, in their ability to actively engage with scholars in a seminar setting, and in their facility with presenting their own scholarship to peers. Enrolment in LAW-914* is restricted to graduate students. Graduate students from outside Law require permission of the instructor. Subject to enrolment, course will be offered annually in the Fall and Winter Terms beginning Fall 2014. (3.0 credit units)

LAW-915* Graduate Legal Studies Forum II

The Graduate Legal Studies Forum aims to expose graduate students to a diverse range of approaches to and topics in legal scholarship. Students will attend and participate in a minimum of eight seminars per term presented by visiting scholars and Queen's faculty. The class will also meet as a group with the course instructor two to three times per term. The Graduate Legal Studies Forum is designed to develop the students' skills as critical and reflective legal scholars. Emphasis will be placed on cultivating proficiency in rigorous scholarly criticism through written and oral engagement with cutting-edge legal scholarship. Students will develop in their appreciation for the methodological diversity of legal scholarship, in their ability to evaluate arguments by leading thinkers in a variety of legal disciplines, in their ability to actively engage with scholars in a seminar setting, and in their facility with presenting their own scholarship to peers. Enrolment in LAW-915 is restricted to graduate students. Graduate students from outside Law require permission of the instructor. Subject to enrolment, course will be offered annually in the Fall and Winter Terms beginning Fall 2014. (3.0 credit units)

LAW-916* Colloquium in Legal and Political Philosophy

This Colloquium course explores new work in legal and political philosophy. Once every two weeks, a legal, moral, or political philosopher will present a paper falling within the general boundaries of the Colloquium's ambit. In alternate weeks, students will meet with the Colloquium convenors to prepare for the forthcoming session, examining the paper in depth. PREREQUISITE: permission of the instructor.

LAW-921* Pensions and the Law

Pension law is a growing field and one that intersects with many different areas of law including labour and employment, human rights, trusts, tax, contract, tort, agency,

bankruptcy, family, administrative and regulatory law. It is also an exciting time as pension legislation across Canada is being reformed in an attempt by governments to balance the need for individuals to have retirement income security with the need to make offering a pension plan viable for employers. Pension policy continues to make headlines as governments address the public and private pension systems, the pensions of public sector employees, and as workplace pension and benefit issues continue to be a focus in collective bargaining and corporate insolvencies. The purpose of this course is to introduce students to the various legal issues relating to the design and operation of Canadian pension and benefit plans. (To be offered jointly with LAW-564). Three term hours.

LAW-941* International Humanitarian Law
International humanitarian law (IHL) is a set of rules which seek, for humanitarian reasons, to limit the effects of armed conflict. It protects persons who are not or are no longer participating in the hostilities and restricts the means and methods of warfare that belligerents may use. International humanitarian law is also known as the law of war or the law of armed conflict. IHL is related to other fields of public international law, in particular to International Criminal Law and to International Human Rights Law. Because IHL purports to regulate the conduct of hostilities, it must, in order to remain relevant, be inherently flexible and fluid in its development. This seminar course explores the evolution and operation of IHL from its ancient roots through to contemporary armed conflicts. The primary focus of this course will be to understand how and why IHL has evolved; use that understanding to analyze how it addresses the challenges posed by the complex nature of contemporary armed conflict; and assess how new legal approaches might be used to provide enhanced protection to victims of armed conflict. (To be offered jointly with LAW-549.) Three term hours.
PREREQUISITE: Public International Law

LAW-946* European Union Law
This course examines the constitution and laws of the European Union (EU).Topics to be considered include: the constitutional structure of the EU, the role of the European Court of Justice, the relationship between EU Law and the domestic laws and courts of members states, EU human rights law, and the law on free movement of goods, workers, and services. Larger issues of theory and policy will also be considered, including the ideas of sovereignty, economic integration, and international cooperation. Three term hours.

LAW 999 Ph.D. Thesis Research
Doctoral research in law under the supervision of a law faculty supervisor and a

supervisory committee consisting of two other faculty members (one of whom may be from a university department or faculty outside the law faculty).

Courses for the Graduate Diploma in Legal Services Management (*first offered effective May 2019*)

The Graduate Diploma in Legal Services Management (GDLSM) will be offered online and in a part-time format only. Students enrolled in the GDLSM will, after completing the Financial Literacy for Lawyers and Fundamentals of Legal Services Business courses, be able to complete the other courses required to receive the diploma in any order they choose. To receive the Graduate Diploma, students must complete two core courses plus two of three electives. All courses will be delivered fully online and offered up to three times per year based on demand.

For more detailed information please see this website:
https://graduatediploma.queenslaw.ca/program

LSM-810* Financial Literacy for Lawyers
This course is designed to introduce students to concepts of financial literacy in order to support them in their interactions with business clients and practice management. It focuses on basic financial accounting techniques, construction and understanding of financial statements, financial statement analysis tools, valuation of assets, tax implications of different legal services delivery mechanisms, and financial accounting and management issues as they relate to professional services firms. This is an online course.
EXCLUSIONS: LAW-849*; Students who have taken MBAS 811 or MBUS 811 for credit will not be able to take this course for credit.

LSM-820* Fundamentals of Legal Services Business
The focus of this course is understanding the basic core functions of the business of a legal practice. The course will cover topics such as strategy, marketing, sales, operations, and business development. Course content includes a mix of theory and application through the use of cases. This is an online course.
EXCLUSION: LAW-844*

LSM-830* Shaping the Future of Legal Practice
This course explores the economic, political, technological, and demographic forces that are disrupting the traditional modes of delivery of legal services. In the context of these disruptive forces, the course will examine the theory and practice of entrepreneurship and innovation in the context of a professional services firm. Finally, the course will

explore how the legal profession can take advantage of changes in the delivery of legal services to improve access to justice for all. This is an online course.
EXCLUSION: LAW-850*

LSM-840* Working with Teams and Managing People
The focus of this course is managing human resources in a legal professional environment. Lawyers need to manage not only staff, but also other lawyers, professional advisors like accountants, and clients. The course will provide students with the foundational knowledge and tools to lead, engage, and manage employees and professional performance. Students will learn through case studies and simulations how to build and manage effective teams. Students will explore best practices to manage change within an organization and respond to internal and external challenges. The course will be highly interactive, in that students will have to work with each other and with the instructor to apply theory towards real world challenges faced by legal practices. This is an online course.
EXCLUSION: LAW-861*

LSM-850* Project Management for Lawyers
Project management is a framework that allows lawyers to provide more reliable fee estimates, better matter management and improved matter profitability. In a highly competitive, fixed-fee environment that is becoming the 'new normal', legal project management can be a law firm's lifeline. This course will introduce students to the principles and practice of project management, including the implementation of alternative fee arrangements. The course will examine best practices used by firms around the world. Particular attention will be given to involving clients in legal project management systems while still meeting lawyers' professional obligations. The course will, for those who are interested, lead to Professional Management Institute (PMI) certification. Students completing the course will be able to qualify for the first level of the Project Management Professional (PMP) designation. To become fully certified as a PMP, graduates will have to complete a certain number of hours of actual project management work, as set out by the PMI. This is an online course.
EXCLUSION: LAW-839*

MANAGEMENT - SMITH SCHOOL OF BUSINESS

NOTES:

1. Students cannot repeat the 800/900 level courses and the same with the 900 level courses if it is cross listed.
2. With the exception of MGMT-898 and MGMT-999, all courses listed with an asterisk (*) are 3.0 credit units. Course weights other than 3.0 credit units are as listed in the course's descriptions (normally 1.5 credit units).

MSc COURSES

MGMT-800* Statistics I
Topics in this course may include, but are not limited to, univariate analysis, bivariate analysis, multiple linear regression, and analysis of variance. Fall. P. Dacin.

MGMT-801 Introduction to Research Methodology
The purpose of this course is to introduce students to the context and traditions of knowledge generation in the social sciences in general, and academic business research in a business school context in particular. This course will encourage students to transcend the technical details of their respective research paradigms so as to position themselves as business school researchers capable of contributing meaningful knowledge to broader academic, business, and societal audiences. Guided by what it means to have a mindset of intellectual curiosity in the social sciences and business school context, this course will tackle questions such as, what it means to be driven by a scientific curiosity; how do we define or construct knowledge in academic business research and how does one's individual research contribute; what are the norms and traditions of being a valuable contributor of knowledge in academic business research? The goal of this course is to enable students to situate their current and forthcoming acquisition of in-depth skills in their research discipline into the mindset of researchers driven by intellectual curiosity seeking to contribute meaningful knowledge in the context and traditions of academic business research. This course is graded on a Pass/Fail basis.(1.5 credit units). Fall.D. Thornton

MGMT-802 Qualitative Research Method Design
This course will provide students with the foundations of qualitative research techniques. Topics covered in this course include, but are not limited to, observational field research, narratives, case histories, interviewing, principles of action research and grounded theory. The equivalent of at least one session of the 6 will be dedicated to

ethical considerations associated with the qualitative methods. (1.5 credit units). Winter. T. Thomas

MGMT-803 Experimental Research Method Design
This course will teach the fundamentals of experimental design for the study of human behaviour including, but not limited to, experimental design considerations; assessment of reliability and validity; the equivalent of at least one session of the 6 will be dedicated to ethical considerations associated with experimental design. (1.5 credit units). Fall. J. Barling

MGMT-804 Survey Research Method Design
This course will provide students with the foundations of survey (field) research method design. Topics covered in this course include, but are not limited to, sample design, execution, and estimation; alternative sample designs and modes of data collection; the effect of question structure, wording, and context on respondent behaviour; the equivalent of at least one session of the 6 will be dedicated to ethical considerations associated with the survey method. (1.5 credit units). Winter. Y. Chan.

MGMT-805* History of Strategic Thought
This course provides a foundation in strategy and organizations by focusing on classic readings and approaches to the field of strategic management. The principal objective is to acquaint students with dominant ideas and a historical context for understanding the evolution of the field. The aim of the course will be to examine a number of perspectives, consider the strengths and weaknesses of each, and to look at the comparative ability of these models to explain a variety of organizational phenomena. Fall. K. Packalen.

MGMT-806* Strategy Process
This course provides an introduction to research on the process and practice of strategy making. The objective of the course is to survey major theoretical debates and empirical works that have considered the strategy making process from different conceptual perspectives and levels of analysis. Topics covered include the routines and tools supporting strategy practice, strategy emergence, strategy implementation and evolution, sensemaking and enactment of strategic change, strategy diffusion across organizations, and institutional and environmental influences on strategy making. Winter. JB Litrico.

MGMT-810* Accounting I - Financial Accounting Research
Elaborating on the themes in Introduction to Accounting Research Markets this course

will examine in detail cutting edge research in financial accounting. (Crossed with MGMT-910*). Not offered 2018-19.

MGMT-811* Management Accounting Research
This seminar provides a broad overview of contemporary research in management accounting. Emphasis is placed on competing theories of the role of management accounting in organizations and society, as well as the issues and problems surrounding the implementation of management accounting techniques in practice. A background in traditional cost and management accounting techniques is assumed. Not offered 2018-19.

MGMT-813 Introduction to Accounting Research - Markets
This course will provide an intensive introduction to principal themes in capital markets research in accounting. (1.5 credit units). Crossed with MGMT-913). Not offered 2018-19

MGMT-814 Introduction to Accounting Research – Experimental
This course will provide an intensive introduction to principal themes in experimental behavioral research in accounting.(1.5 credit units).(Crossed with MGMT-914). Not offered 2018-19.

MGMT-815 Introduction to Accounting Research – Field
This course will provide an intensive introduction to the principal themes in qualitative methodological research in accounting.(1.5 credit units)(Crossed with MGMT-915). Not offered 2018-19.

MGMT-821* Capital Markets, Theory and Empirics
This course covers the theory and empirics related to capital markets research and the pricing of assets. Possible topics include characteristics of financial asset returns, tests of market efficiency, asset pricing models, and market microstructure. (Crossed with MGMT-921*) Fall. R. Riordan

MGMT-822* Corporate Finance, Theory and Empirics
This course will develop an overall perspective of corporate financial decisions through an integrated coverage of the most fundamental topics of corporate finance. The first part of the course will cover standard corporate finance theoretical models as well as their foundations. Topics may include applied contract theory, market monitoring, corporate governance, dividend policy, capital structure, and security design. The second part of the course will survey the most prominent empirical studies on corporate finance topics such as capital structure, corporate cash and dividend policy, security

issuance, corporate governance, compensation contract design, and corporate restructuring. The goal of this part of the course is to not only to build a bridge between theoretical and empirical corporate finance research, but also help students gain a deep understanding on how to formulate research questions and design proper empirical methodology for execution. (Crossed with MGMT-922*) Winter. P. Chaigneau/W. Wang.

MGMT-840 Marketing Strategy and Management I
The Marketing Strategy and Management I and II seminars survey theories and frameworks associated with practice of marketing as seen through the eyes of academic researchers. Course readings focus on topics related to marketing strategy and marketing management. Marketing strategy consists of the knowledge, concepts and processes that allow firms to evolve and survive in a competitive environment including, the analysis of markets, the allocation of resources for the creation of superior customer value and the creation of a competitive advantage. Marketing management consists of those decisions that translate strategic goals into market-based actions typically through implementing various elements of the marketing mix. In addition to the embodiment of a market/customer focus and the understanding and management of key relationships, the application of marketing strategy also ensures that an organization has the structure and processes that allow it to deliver superior benefits and respond in an appropriate and timely manner to change. (Crossed with MGMT-940) (1.5 credit units). Fall. P. Dacin

MGMT-841 Marketing Strategy and Management II
The Marketing Strategy and Management I and II seminars survey theories and frameworks associated with practice of marketing as seen through the eyes of academic researchers. Course readings focus on topics related to marketing strategy and marketing management. Marketing strategy consists of the knowledge, concepts and processes that allow firms to evolve and survive in a competitive environment including, the analysis of markets, the allocation of resources for the creation of superior customer value and the creation of a competitive advantage. Marketing management consists of those decision that translate strategic goals into market-based actions typically through implementing various elements of the marketing mix. In addition to the embodiment of a market/customer focus and the understanding and management of key relationships, the application of marketing strategy also ensures that an organization has the structure and processes that allow it to deliver superior benefits and respond in an appropriate and timely manner to change. (Crossed with MGMT-941)(1.5 credit units). Not offered 2018-19.

MGMT-842 Consumer Behaviour I
This course seeks to enhance students' appreciation of the interdisciplinary and varied methodological nature of the field by providing an overview of issues concerned with "consumption," in a broad sense, as well as individual level consumer behavior, information processing and consumer decision-making. Topics include sociological and cultural influences on consumers, influences on how consumers interpret and respond to marketing phenomena, and psychological and psycho-social influences on consumer choice and decision processes. (Crossed with MGMT-942)(1.5 credit units). Fall. L. Ashworth

MGMT-843 Consumer Behaviour II
This course extends Consumer Behaviour I by expanding upon the key theoretical perspectives within the discipline of consumer behavior introduced in that course, as well as introducing additional areas of behavioural research not covered in CB I. In both seminars, the focus is on the applicability of behavioral theories and methodologies in the pursuit of a well-developed understanding of the consumption process.(Crossed with MGMT-943)(1.5 credit units). Not offered 2018-19.

MGMT-844 Consumer Culture Theory I
This course will examine consumers and their consumption behaviours and practices as social and cultural phenomena as opposed to economic or psychological phenomena. By examining the relationship between consumers, the market place and cultural meaning, this course will cover the macro, interpretive, and cultural approaches found in Consumer Culture Theory research. (Crossed with MGMT-944)(1.5 credit units). Not offered 2018-19.

MGMT-846 Consumer Culture Theory II
This course will examine consumers and their consumption behaviours and practices as social and cultural phenomena as opposed to economic or psychological phenomena. By examining the relationship between consumers, the market place and cultural meaning, this course will cover the macro, interpretive, and cultural approaches found in Consumer Culture Theory research. (Crossed with MGMT-946)(1.5 credit units) Not offered 2018-19.

MGMT-847* Research Development I
The purpose of this course is to provide students with an appreciation of the research process and the broader academic career. Through a series of workshops, lectures, and roundtable discussions, students will develop an understanding of the professional expectations of an academic career, including an appreciation for the academic culture that includes, among other things, critical review processes. Students will learn the

central role of theory in the research process and they will start to develop the discipline of effective academic writing that they can apply to their Summer Research project. Students will begin the course by sharing their initial research interests. In workshop fashion, students will come to develop this research interest throughout the course. (Crossed with MGMT-947*). Fall/Winter. J. Handelman.

MGMT-850* Foundations of Research in Organizational Behaviour
The purpose of the course is to introduce you to the process of theory building in the field of organizational behaviour. The course examines several prominent theories in the field and explores recent evidence that assesses central claims made by the theory. The course also provides opportunities to develop skills in theory building. (Crossed with MGMT-950*). Fall. W. Cooper

MGMT-851* Seminar in Micro-Organizational Behaviour
The aim of this course is to examine the individual in the organization. Topics include the nature, development and consequences of different forms of leadership, work and well-being, organizational commitment, trust in management, organizational justice, absenteeism and withdrawal from the organization, workplace safety, motivation, and job design.(Crossed with MGMT-951*). Fall. J. Barling

MGMT-860* Deterministic Operations Research Models
This course reviews and extends deterministic operations research model formulation, solution, and applications. Topics may include linear, non-linear, and integer programming, dynamic programming, spreadsheet modelling, network and transportation models, and project management models. (Crossed with MGMT-960*). Fall. M. Thompson

MGMT-861* Probabilistic Operations Research Models
This course reviews the formulation, solution, and application of a range of probabilistic modelling techniques. Topics may include inventory models, queueing, simulation, decision analysis, Markov models, forecasting, and stochastic dynamic programming. (Crossed with MGMT-961*). Fall. A. Nalca.

MGMT-865* Analysis of Supply Chains
In this course we will explore modern analytical approaches to optimization in production and supply chain systems. Topics may include production and inventory control, process control, location analysis, sustainability, and integration of supply chains, including game-theoretic approaches. (Crossed with MGMT-965*) Not offered 2018-19.

MGMT-870* Foundations of MIS I
This course begins to survey the major research areas in the field, including the design, implementation, use, and management of information systems within organizations. Its purpose is to expose students to the breadth of the field, by analyzing both the classic and current literature. For each area, we will examine the predominant theoretical perspectives, research methodologies, and analytical techniques.(Crossed with MGMT-970*). Fall. J. Webster/K. Brohman/K. Greenaway.

MGMT-871* Foundations of MIS II
This course continues with the survey of major research areas begun in MGMT-870. Again, for each area, we will examine the predominant theoretical perspectives, research methodologies, and analytical techniques. An emphasis will be placed on students developing their own research expertise and plans: students will learn how to design, conduct, evaluate, and present good research in the MIS area. (Crossed with MGMT-971*). Winter. K. Greenaway/J. Webster/K. Brohman.

MGMT-882* Economics of Organizations
This course discusses elements of the economics of organizational design and decision processes. Using concepts and techniques from applied microeconomics, it provides an analysis of organizational form, structure, and boundaries. Examples are drawn from the literature to illustrate the theoretical concepts and to demonstrate how they can be used to predict organizational performance and aid in changing organizations effectively. (Crossed with MGMT-982) NNot offered 2018-19.

MGMT-883* Survey of Economics of Technology
This course surveys the main issues in the Economics of Technology and presents some of the seminal papers in the area. A major goal of this course is to develop an understanding of the nature of the forces driving competitive interaction between technology-based firms. Topics covered include: diffusion of innovations, technology strategy, managing R&D, patents, licensing, and the financial evaluation of new technologies. Not offered 2018-19.

MGMT-884* Economics of Technological Innovation
This course provides an understanding of the economics of technological change and thus the foundations for technology strategy. Throughout the course we study both theoretical models and empirical analysis that clarify the interactions between market forces, technological innovation and firm capabilities. Topics include diffusion of technologies and patent races, licensing technology and joint ventures, technology standards, small entrepreneurial firms and innovation, financing R&D and technology policy. Not offered 2018-19.

MGMT-885* Managerial Economics and Policy Seminar
This is a seminar course in which recent publications and studies will be used to highlight various key issues in managerial economics and policy. The specific topics covered may vary from year to year but will be representative of the major areas in which economics informs managerial decision-making. (Crossed with MGMT-985*). Not offered 2018-19.

MGMT-886* International Trade and Factor Flows
This course provides a graduate level introduction to international economics with an emphasis on tools useful to managers and policy makers. Topics will be drawn from the theory of international trade, capital flows, foreign direct investment, migration, and technology flows. The course will cover both key theories in international economics and important empirical applications. Not offered 2018-19.

MGMT-887* International Economic Policy and Global Management
This course examines the making of international economic policy from both normative and positive perspectives. Special attention will be given to the strategic implications of international borders for policy makers and managers. Topics include: optimal trade policy, political economy of protection, dispute resolution under NAFTA and the WTO, design of the international financial architecture, exchange rate regimes, skill-focused migration policy, and the international absorption and protection of technological knowledge. Not offered 2018-19.

MGMT-890* Econometric Methods
This course covers selected topics in the empirical methods of cross-section and panel data analysis. Various econometric techniques are discussed in workshop format to help students interpret and critically evaluate empirical evidence. Emphasis is placed on practical aspects and application. (Crossed with MGMT-990*). Winter. O. Ivus

NOTE: Students cannot repeat the 800/900 level course if it is cross listed.

MGMT-898 MSc Research Project

PhD COURSES

MGMT-900* Statistics II
This course will be a continuation of Statistics I. Topics in this course may include, but are not limited to, categorical data analysis, multivariate linear regression, discriminant analysis, canonical correlation, multivariate analysis of variance, principal component analysis, factor analysis, cluster analysis, logistic regression, etc. Fall. P. Dacin.

MGMT-901* Ethics in Organization Life

Corporations are widely thought to have an economic obligation to enhance shareholder value and in doing so they have a wide range of legal obligations to stakeholders both within and outside of the organization. But are there moral obligations as well? If so, what are they and to who are they owed? This is a business ethics course taught from a philosophical perspective. No prior course work in ethics is presumed. It is intended for M.Sc. and Ph.D. students who want to deepen their knowledge of ethical issues in both the profit and not-for-profit sectors. For students pursuing further theoretical or empirical work in the field the course provides a solid theoretical foundation. Ethical theories to be examined include Utilitarianism, Kantian Deontology, human rights and virtue ethics. Building on these frameworks, ethical issues will be explored in areas that can include privacy, discrimination and affirmative action, whistle-blowing, workplace health and safety, advertising, conflict of interest, executive compensation, bribery in international business, corporate social responsibility and corporate governance. Not offered 2018-19.

MGMT-902 Applied Econometrics in Strategy

This course examines econometric problems specific to the field of management. Despite the existence of rich theoretical frameworks, intriguing and persistent empirical puzzles have evolved around the strategic choices made by firms and around why seemingly well-devised strategies can fail to create value. Recent methodological advances have allowed scholars to delve deeper into understanding organizational behavior and to better model unobserved or omitted factors that can confound the interpretation of results. This is an applied course examining techniques that are important while modelling choice, performance, and survival in the organizational context. Sessions will typically involve a brief review of selected studies, and overview of the underlying methodologies, and hands-on application exercises. As part of the course, students will also have the opportunity to discuss and advance their own studies. (1.5 credit units) Not offered 2018-19.

MGMT-903* Foundations of Multivariate Statistics and the General Linear Model

This course is designed to provide a common foundation in statistics for doctoral students as a basis for more specialized statistical development. After reviewing some aspects of probability and the theory of statistical estimation, the general linear model is examined in detail. Some important extensions, and certain variants (e.g., discriminant and factor analysis) are also discussed. The emphasis is on the assumptions, limitations and power of the model(s) in the context of applied data analysis. Not offered 2018-19.

MGMT-904 Strategies for Social Impact
The goal of this course is to examine management research that investigates the impact of organizations on social issues and social change. Drawing on current developments in strategy and organization theory, the course will cover topics including: social entrepreneurship, social intrapreneurship, measuring social impact, nonprofit organizations, social enterprises and new organizational forms for social impact, scaling and diffusion of social innovations, business and poverty alleviation, corporate philanthropy, among others. (1.5 credit units). Not offered 2018-19.

MGMT-905* Entrepreneurship and Innovation
This seminar introduces you to theoretical and empirical literature in the domain of entrepreneurship. Research in entrepreneurship draws on a range of other disciplines. In this course the core discipline most frequently drawn upon in the assigned readings will be sociology (and its sub-domains of economic sociology and institutional theory) followed by economics. Theories drawn from psychology will be much less prominent. Following an introduction to entrepreneurship as a distinct field of research, each week will focus on a different stage of the entrepreneurial life cycle of a firm. Topics may include opportunity recognition, the process of innovation, institutional influences on entrepreneurship, the role that networks and social capital play in the development and growth of firms, corporate entrepreneurship, and entrepreneurial exit. Fall. K. Packalen

MGMT-906* Corporate Strategy Dynamics
This course examines corporate strategy dynamics, studying how firms scan the environment, gather information, and deal with information asymmetries; how firms perceive, interpret, and respond to environmental threats; and how firms transact under conditions of market failure. These dynamics will be studied in the context of organizational growth, acquisitions, reconfiguration, spatial evolution, strategic alliances, and divestiture. The course is expected to provide opportunities for students to develop and present research ideas in an emerging field. In addition, the course aims to contribute to student research efforts by (i) examining an emerging synthesis of existing theories that has application across domains, including innovation, CSR, governance, strategy process, international business, emerging market strategy, and institutional theory, and (ii) exploring the research process in complex empirical contexts. Not offered 2018-19.

MGMT-907* Contemporary Issues in Strategic Management
This course provides a comprehensive overview of theoretical models and empirical studies that address the fundamental questions in strategic management research: Why do firms perform differently? Why are firms different? How do firms behave? What are firms' optimal boundaries? Each class will cover a different research stream within the

strategic management field such as resource-based theory, knowledge-based view, behavioral theory of the firm, competitive dynamics, dynamic capabilities, alliance portfolios and networks, top management teams, real options theory and diversification strategy. Both seminal and more recent theoretical and empirical research will be discussed. The aim is to help students develop a mental model of the literature and to recognize interrelationships between different research streams. This course is intended for graduate students interested in conducting research in strategic management or related fields. Winter. G. Andrevski

MGMT-908 Social Network Theory and Methods

In this course, students are introduced to the social networks perspective for analyzing organizational phenomena. Social networks refer to the structure of relationships among individuals, groups, and organizations. The patterns of relationships influence behavior and performance. For example, favorable positions in the network structure are associated with power and influence, innovation and creativity, leadership effectiveness, organizational learning, innovation adoption, firm survival, and organizational performance. The first half of each class will cover theoretical analysis of network constructs such as small worlds, centrality, cohesion, clusters, and structural equivalence. The second part will include a workshop on social network methods and statistical analysis using UCINET software. The workshop will cover topics such as research design, data collection, data management, network measures, hypotheses testing, and visualization. (1.5 credit units). Not offered 2018-19.

MGMT-909 Applied Econometrics in Strategy

This course examines econometric problems specific to the field of management. Despite the existence of rich theoretical frameworks, intriguing and persistent empirical puzzles have evolved around the strategic choices made by firms and around why seemingly well-devised strategies can fail to create value. Recent methodological advances have allowed scholars to delve deeper into understanding organizational behavior and to better model unobserved or omitted factors that can confound the interpretation of results. This is an applied course examining techniques that are important while modeling choice, performance, and survival in the organizational context. Sessions will typically involve a brief review of selected studies, and overview of the underlying methodologies, and hands-on application exercises. As part of the course, students will also have the opportunity to discuss and advance their own studies. (1.5 credit units). Not offered 2018-19.

MGMT-910* Accounting I - Financial Accounting Research

Elaborating on the themes in Introduction to Accounting Research Markets this course

will examine in detail cutting edge research in financial accounting. (crossed with MGMT-810*). Not offered 2018-19.

MGMT-911* Accounting II - Auditing Research
Elaborating on the themes in Introduction to Accounting Research Experimental and Introduction to Accounting Research Field this course will examine in detail cutting edge research in auditing. Winter. S. Salterio

MGMT-912* Accounting III - Management Accounting Research
Elaborating on the themes in the Introduction to Accounting Research Experimental and the Introduction to Accounting Research Field this course will examine in detail cutting edge research in management accounting. Not offered 2018-19.

MGMT-913 Introduction to Accounting Research - Markets
This course will provide an intensive introduction to principal themes in capital markets research in accounting. (1.5 credit units). (Crossed with MGMT-813). Fall. D. Thornton.

MGMT-914 Introduction to Accounting Research – Experimental
This course will provide an intensive introduction to principal themes in experimental behavioral research in accounting.(1.5 credit units).(Crossed with MGMT-814). Fall. P Murphy.

MGMT-915 Introduction to Accounting Research – Field
This course will provide an intensive introduction to the principal themes in qualitative methodological research in accounting. (1.5 credit units). (Crossed with MGMT-815).Fall. B. Malsch

MGMT-916* Special Topics in Accounting
Specialized topics in accounting research will be covered. The subject matter may vary from year to year depending on the interests of students and faculty. Not offered 2018-19.

MGMT-920* Finance Theory
This course studies the theoretical foundations of the financial problems faced by individuals and firms under conditions of uncertainty. Contemporary theory is examined as it relates to portfolio selection by individuals, equilibrium market values of capital assets, the behaviour of capital asset prices and yields over time. (Crossed with ECON-870*). Not offered 2018-19.

MGMT-921* Capital Markets, Theory and Empirics
This course covers the theory and empirics related to capital markets research and the pricing of assets. Possible topics include characteristics of financial asset returns, tests of market efficiency, asset pricing models, and market microstructure.(Crossed with MGMT-821*). Fall. R. Riordan

MGMT-922* Corporate Finance, Theory and Empirics
This course will develop an overall perspective of corporate financial decisions through an integrated coverage of the most fundamental topics of corporate finance. The first part of the course will cover standard corporate finance theoretical models as well as their foundations. Topics may include applied contract theory, market monitoring, corporate governance, dividend policy, capital structure, and security design. The second part of the course will survey the most prominent empirical studies on corporate finance topics such as capital structure, corporate cash and dividend policy, security issuance, corporate governance, compensation contract design, and corporate restructuring. The goal of this part of the course is to not only to build a bridge between theoretical and empirical corporate finance research, but also help students gain a deep understanding on how to formulate research questions and design proper empirical methodology for execution. (Crossed with MGMT-822*) . Winter. P. Chaigneau/W.Wang.

MGMT-923* Financial Economics
The objective of this course is to provide students the rigorous theoretical foundations of modern financial economics. The course will cover the central themes of modern finance including individual investment decisions under uncertainty, stochastic dominance, mean variance analysis, arbitrage pricing theory, capital market equilibrium and asset valuation, risk neutral valuation, and incomplete markets. It will give a quick introduction to Ito calculus and its applications to derivative pricing, including options, futures, interest rates, and credit risks. After completing this course, the students should acquire a clear understanding of the major theoretical results concerning individuals' consumption and portfolio decisions under uncertainty and their implications for the valuation of securities. Winter. W. Suo PREREQUISITES: Calculus, matrix algebra and probability.

MGMT-924* Topics in Finance
This is a seminar course designed to expose students to aspects of finance not covered in detail in other courses in the program. Its aim is to integrate these topics into a broader understanding of the overall field of finance. Topics will vary from year to year depending on the interests and backgrounds of the students and the instructor(s); possible topics may include financial institutions, fixed income securities, corporate

governance, and behavioural finance. Students are advised to contact the instructor each year for details of the course coverage. Not offered 2018-19.

MGMT-925* Empirical Studies
This course is intended to introduce students to a number of substantive and, in some cases, specialized topics in the broadly defined area of empirical research in finance. Topics may include characteristics of financial asset returns, tests of market efficiency and empirical tests of asset pricing models. Not offered 2018-19.

MGMT-926* Financial Systems: Theory and Applications
This course discusses the economic role of various types of financial intermediaries and financial markets. Topics include: the role of banks in facilitating financing flows between savers and borrowers; the role of payment systems, their problems and the evolution of electronic clearing systems; the evolution of the financial system and the changing role of institutions in accommodating new functions; financial regulation and deregulation. Examples will be drawn largely from Canada and the U.S. (Crossed with ECON-871*). Winter. E. Neave

MGMT-927 Directed Readings and Workshop
This course consists of two components, both of which are designed to introduce the student to the requirements of academic research in the field of finance. The first component, lasting the entire year, requires students to attend and actively participate in a seminar series with visiting speakers. Students will provide feedback and constructive criticism to the speaker on his or her work. The second component, to take place primarily in the winter semester, requires the student to work individually with a faculty member to produce a comprehensive review of the literature in their field of interest along with suggestions for future research opportunities. Topics are at the discretion of the faculty member. This course is graded on a Pass/Fail basis. (6.0 credit units.). Not offered 2018-19.

MGMT-939* Advanced Topics in Marketing
This seminar course exposes Ph.D. students in marketing to aspects of marketing not covered in detail in other courses in the program. This opportunity could be created by the presence of a visiting scholar or by the desire of current faculty to share the exploration of an emerging topic in marketing theory or practice. The aim of the course would be to integrate the topic into a broader understanding of the field of marketing. Not offered 2018-19.

MGMT-940 Marketing Strategy and Management I
The Marketing Strategy and Management I and II seminars survey theories and

frameworks associated with practice of marketing as seen through the eyes of academic researchers. Course readings focus on topics related to marketing strategy and marketing management. Marketing strategy consists of the knowledge, concepts and processes that allow firms to evolve and survive in a competitive environment including, the analysis of markets, the allocation of resources for the creation of superior customer value and the creation of a competitive advantage. Marketing management consists of those decision that translate strategic goals into market-based actions typically through implementing various elements of the marketing mix. In addition to the embodiment of a market/customer focus and the understanding and management of key relationships, the application of marketing strategy also ensures that an organization has the structure and processes that allow it to deliver superior benefits and respond in an appropriate and timely manner to change.(Crossed with MGMT-840) (1.5 credit units). Fall. P. Dacin.

MGMT-941 Marketing Strategy and Management II

The Marketing Strategy and Management I and II seminars survey theories and frameworks associated with practice of marketing as seen through the eyes of academic researchers. Course readings focus on topics related to marketing strategy and marketing management. Marketing strategy consists of the knowledge, concepts and processes that allow firms to evolve and survive in a competitive environment including, the analysis of markets, the allocation of resources for the creation of superior customer value and the creation of a competitive advantage. Marketing management consists of those decision that translate strategic goals into market-based actions typically through implementing various elements of the marketing mix. In addition to the embodiment of a market/customer focus and the understanding and management of key relationships, the application of marketing strategy also ensures that an organization has the structure and processes that allow it to deliver superior benefits and respond in an appropriate and timely manner to change. (Crossed with MGMT-841)(1.5 credit units). Not offered 2018-19.

MGMT-942 Consumer Behaviour I

This course seeks to enhance students' appreciation of the interdisciplinary and varied methodological nature of the field by providing an overview of issues concerned with "consumption," in a broad sense, as well as individual level consumer behavior, information processing and consumer decision-making. Topics include sociological and cultural influences on consumers, influences on how consumers interpret and respond to marketing phenomena, and psychological and psycho-social influences on consumer choice and decision processes. (Crossed with MGMT-842)(1.5 credit units). Fall. L. Ashworth

MGMT-943 Consumer Behaviour II
This course extends Consumer Behaviour I by expanding upon the key theoretical perspectives within the discipline of consumer behavior introduced in that course, as well as introducing additional areas of behavioural research not covered in CB I. In both seminars, the focus is on the applicability of behavioral theories and methodologies in the pursuit of a well-developed understanding of the consumption process.(Crossed with MGMT-843)(1.5 credit units). Not offered 2018-19.

MGMT-944 Consumer Culture Theory I
This course will examine consumers and their consumption behaviours and practices as social and cultural phenomena as opposed to economic or psychological phenomena. By examining the relationship between consumers, the market place and cultural meaning, this course will cover the macro, interpretive, and cultural approaches found in Consumer Culture Theory research. (Crossed with MGMT-844)(1.5 credit units). Not offered 2018-19.

MGMT-945 Quantitative Models for Marketing I
The course is designed to serve as an introduction to quantitative models in marketing with strong emphasis on research that has implications for solving managerial problems. QMM-I investigates market performance of firms using aggregate-level models while QMM-II focuses on consumer -level analysis including choice models. The main objectives for QMM-I and QMM-II are 1) to familiarize students with fundamentals of aggregate and individual-level models in marketing, 2) to help them acquire modeling skills they can apply to their own research or use to appreciate the extant marketing science literature and 3) to encourage students to come up with research areas and ideas that they will be interested to work in. To facilitate students to get acquainted with many topics each session will concentrate on a major managerial problem such as resource allocation, advertising decisions, diffusion of innovations, pricing and promotion decisions. The class discussion will highlight both the managerial significance of various substantive areas and how different modeling. (1.5 credit units). Winter. C. Kolsarici.

MGMT-946 Consumer Culture Theory II
This course will examine consumers and their consumption behaviours and practices as social and cultural phenomena as opposed to economic or psychological phenomena. By examining the relationship between consumers, the market place and cultural meaning, this course will cover the macro, interpretive, and cultural approaches found in Consumer Culture Theory research. (Crossed with MGMT-846) (1.5 credit units). Winter. J. Handelman

MGMT-947* Research Development I
The purpose of this course is to provide students with an appreciation of the research process and the broader academic career. Through a series of workshops, lectures, and roundtable discussions, students will develop an understanding of the professional expectations of an academic career, including an appreciation for the academic culture that includes, among other things, critical review processes. Students will learn the central role of theory in the research process and they will start to develop the discipline of effective academic writing that they can apply to their Summer Research project. Students will begin the course by sharing their initial research interests. In workshop fashion, students will come to develop this research interest throughout the course. (Crossed with MGMT-847*). Fall/Winter. J. Handelman.

MGMT-948 Quantitative Models for Marketing II
The course is designed to serve as an introduction to quantitative models in marketing with strong emphasis on research that has implications for solving managerial problems. QMM-I investigates market performance of firms using aggregate-level models while QMM-II focuses on consumer -level analysis including choice models. The main objectives for QMM-I and QMM-II are 1) to familiarize students with fundamentals of aggregate and individual-level models in marketing, 2) to help them acquire modeling skills they can apply to their own research or use to appreciate the extant marketing science literature and 3) to encourage students to come up with research areas and ideas that they will be interested to work in. To facilitate students to get acquainted with many topics each session will concentrate on a major managerial problem such as resource allocation, advertising decisions, diffusion of innovations, pricing and promotion decisions. The class discussion will highlight both the managerial significance of various substantive areas and how different modeling techniques are employed to effectively address these problems.(1.5 credit units). Winter. C. Kolsarici

MGMT-949* Research Development II
This course builds on the components of the first Research Development course. This course will commence in May which is immediately after the completion of the first course and right in the midst of students conducting their summer research projects. Therefore, the purpose of this course is to provide students with real time guidance as they are developing their summer project. The course also enables students to develop advanced level skills in critiquing their own (and other's) research work, and advanced level skills at assembling a complete, high quality manuscript. Over the year of the course, students will develop an appreciation for the manuscript review process, and the timelines involved in this process. Not offered 2018-19.

MGMT-950* Foundations of Research in Organizational Behaviour
The purpose of the course is to introduce you to the process of theory building in the field of organizational behaviour. The course examines several prominent theories in the field and explores recent evidence that assesses central claims made by the theory. The course also provides opportunities to develop skills in theory building. (Crossed with MGMT-850*). Fall. W. Cooper

MGMT-951* Seminar in Micro-Organizational Behavior
The aim of this course is to examine the individual in the organization. Topics include the nature, development and consequences of different forms of leadership, work and well-being, organizational commitment, trust in management, organizational justice, absenteeism and withdrawal from the organization, workplace safety, motivation, and job design.(Crossed with MGMT-851*). Fall. J. Barling

MGMT-952* Advanced Topics in Organization Theory
This course analyses the development of, and contemporary directions in, the field of organization theory, with particular focus upon the relevance of organization theory to issues of economy and society. Drawing upon traditional and contemporary social theory as a backdrop, topics covered include scientific management, the human relations school, the Carnegie school, contingency analysis, labour process theory, resource dependence theory, the economic analysis of organizations, institutional theory, organizational demographics, and others. Winter. T. Dacin

MGMT-953* Seminar in Meso-Organizational Behaviour
This course introduces students to meso-organizational behavior, which is concerned with the study of organizational phenomena that occur across more than one level of analysis (e.g., individual, group, organizational, national). Students will learn about multilevel theory and methodologies, with an emphasis on the emergence and functioning of collective constructs. The course will also provide coverage of numerous organizational behaviour topics that span levels, which may include person-environment fit, group and organizational climates, group diversity, group processes and performance, socially shared cognition, emotional contagion, and leaders' influence in social collectives. Not offered 2018-19.

MGMT-954* Advanced Topics in Organizational Behaviour I
course builds upon the material covered in foundational organizational behaviour Ph.D. courses, and provides students with an opportunity for in-depth coverage of selected advanced topics in organizational behaviour. The topics will vary yearly, but there will be an emphasis on the integration of research and theory, as well as enhancing students' research competencies throughout the course. Winter. S. Brodt

MGMT-955* Special Topics in Management Science
Specialized topics in Management Science research will be covered. The subject may vary from year to year depending on the interests of the students and faculty.

MGMT-956* Advanced Topics in Organizational Behaviour II
This course provides students with a second opportunity for in-depth coverage of selected advanced topics in organizational behaviour. The topics will vary yearly, but there will be an emphasis on the integration of research and theory, as well as enhancing students' research competencies throughout the course. Not offered 2018-19.

MGMT-957* Special Topics Reading Course
Specialized topics in organizational behaviour will be covered. The subject matter will vary from year to year depending on the interests of the faculty.

MGMT-960* Deterministic Operations Research Models
This course reviews and extends deterministic operations research model formulation, solution, and applications. Topics may include linear, non-linear, and integer programming, dynamic programming, spreadsheet modelling, network and transportation models, and project management models. (Crossed with MGMT-860*). Fall. M. Thompson

MGMT-961* Probabilistic Operations Research Models
This course reviews the formulation, solution, and application of a range of probabilistic modelling techniques. Topics may include inventory models, queueing, simulation, decision analysis, Markov models, forecasting, and stochastic dynamic programming. NOTE: Students cannot repeat the same 800/900 level course if it is cross listed. (Crossed with MGMT-861*). Winter. M. Nediak

MGMT-962* Big Data Analytics
The course will review how advanced techniques addressing the Big Data challenges of Volume, Velocity, Variety and Veracity provide a foundation for Analytics strategy in different fields of Management. The course will consider the elements of the state-of-the-art in the Big Data ecosystem that directly implement large-scale Analytics. The topics covered in the course include but are not limited to large-scale machine learning methods, collaborative filtering, natural language processing, network analytics, and analytics for streaming data as well as advanced applications of these methods in business. Winter. M. Nediak.

MGMT-963* Machine Learning and Artificial Intelligence
The course will provide an overview of the theory and management applications of

state-of-the-art Machine Learning (ML) and Artificial Intelligence (AI) techniques. ML&AI techniques covered include, but are not limited to, modern versions of unsupervised and supervised learning problems, recent methodological advances such as neural networks and reinforcement learning, as well as ML&AI applications of computational game theory. Not offered 2018-19.

MGMT-964* Advanced Topics in Analytics
This seminar will focus on topics of current interest in the field. Subjects may include combinatorial optimization methods, computational complexity, decision theory, operations management, revenue management, or others. The intention of the seminar is to bring students to the leading edge of research in the field, and extensive use of current journals will be made. Winter. G. Li.

MGMT-965* Analysis of Supply Chains
In this course we will explore modern analytical approaches to optimization in production and supply chain systems. Topics may include production and inventory control, process control, location analysis, sustainability, and integration of supply chains, including game-theoretic approaches. (Crossed with MGMT-865*). Not offered 2018-19.

MGMT-970* Foundations of MIS I
This course begins to survey the major research areas in the field, including the design, implementation, use, and management of information systems within organizations. Its purpose is to expose students to the breadth of the field, by analyzing both the classic and current literature. For each area, we will examine the predominant theoretical perspectives, research methodologies, and analytical techniques.(Crossed with MGMT-870*). Fall. J. Webster/K. Brohman/K. Greenaway.

MGMT-971* Foundations of MIS II
This course continues with the survey of major research areas begun in MGMT-970. Again, for each area, we will examine the predominant theoretical perspectives, research methodologies, and analytical techniques. An emphasis will be placed on students developing their own research expertise and plans: students will learn how to design, conduct, evaluate, and present good research in the MIS area. (Crossed with MGMT-871*). Winter. K. Greenaway/K. Brohman/J. Webster.

MGMT-972* Advanced Topics in the Design, Development and Implementation of Information Systems
This course examines the development of information systems from the organizational, team and individual perspectives. Proprietary, inter-organizational and open domains

of the development of business applications and IT architecture are covered. Topics include IS development practices, IS project management, IS maintenance, and IS sourcing with a focus on how individual characteristics, team dynamics, and organizational factors influence information systems design, development and implementation. Not offered 2018-19.

MGMT-973* Advanced Topics in Management Support Systems
This course examines research on management support systems. Management support systems is a major stream in information systems research covering such topics as decision support systems, group support systems, recommender systems for management, systems to support virtual teams, and knowledge management systems. The course explores the nature, role, and impacts of these systems on individuals and groups in the organization. Research in this area is diverse, covering a variety of theoretical bases, research methods, and reference discipline perspectives. Not offered 2018-19.

MGMT-974* Advanced Topics in the Evaluation of Information Systems
This course examines current research on the impact of information technology on individual, group and organizational performance. It focuses on developing an understanding of how information technology (IT) changes both the processes and outcomes of work within an organization. At the individual level, topics include the impact of IT on employee work and productivity, the determinants of IT usage, and the influence of IT on decision-making. At the group level, topics include the influence of IT on group communication, social processes, and productivity in face-to-face and distributed settings. At the organizational level, topics involving the evaluation of IT investments and their impact on firm performance are examined. A variety of research perspectives drawing on methods from psychology, organization theory, strategy, economics, sociology and other disciplines are examined. Winter. S. Addas

MGMT-975* Special Topics in MIS
Specialized topics in MIS research will be covered. The subject matter may vary from year to year depending on the interests of students and faculty. Not offered 2018-19.

MGMT-976* Emerging Topics in MIS
Emerging topics in MIS research will be covered. The subject matter may vary from year to year depending on the interests of students and faculty. Not offered 2018-19.

MGMT-980* Managerial Economics Theory and Research
This course will introduce students to the economic foundations of management. It reviews modern microeconomic and macroeconomic theory as they relate to

management theory and the firm. The treatment will be essentially qualitative, although some statistics and mathematics will be required. Not offered 2018-19.

MGMT-981* Advanced Topics in Managerial Economics
This is a seminar course. The specific topics covered may vary from year to year but will be representative of the major areas in which economics informs managerial decision-making. Recent publications and research studies are used both to draw together the theoretical knowledge acquired in earlier courses and to focus the student's attention on the application of this knowledge to business situations. Not offered 2018-19.

MGMT 982* Economics of Organizations
This course discusses elements of the economics of organizational design and decision processes. Using concepts and techniques from applied microeconomics, it provides an analysis of organizational form, structure, and boundaries. Examples are drawn from the literature to illustrate the theoretical concepts and to demonstrate how they can be used to predict organizational performance and aid in changing organizations effectively. (Crossed with MGMT-882*). Not offered 2018-19.

MGMT-983* Survey of Economics of Technology
This course surveys the main issues in the Economics of Technology and presents some of the seminal papers in the area. A major goal of this course is to develop an understanding of the nature of the forces driving competitive interaction between technology-based firms. Topics covered include: diffusion of innovations, technology strategy, managing R&D, patents, licensing, and the financial evaluation of new technologies. Not offered 2018-19.

MGMT-984* Economics of Technological Innovation
This course provides an understanding of the economics of technological change and thus the foundations for technology strategy. Throughout the course we study both theoretical models and empirical analysis that clarify the interactions between market forces, technological innovation and firm capabilities. Topics include diffusion of technologies and patent races, licensing technology and joint ventures, technology standards, small entrepreneurial firms and innovation, financing R&D and technology policy. Not offered 2018-19.

MGMT-985* Managerial Economics and Policy Seminar
This is a seminar course in which recent publications and studies will be used to highlight various key issues in managerial economics and policy. The specific topics covered may vary from year to year but will be representative of the major areas in

which economics informs managerial decision-making. (Crossed with MGMT-885*).Not offered 2018-19.

MGMT-986* International Trade and Factor Flows
This course provides a graduate level introduction to international economics with an emphasis on tools useful to managers and policy makers. Topics will be drawn from the theory of international trade, capital flows, foreign direct investment, migration, and technology flows. The course will cover both key theories in international economics and important empirical applications. Not offered 2018-19.

MGMT-987* International Economic Policy and Global Management
This course examines the making of international economic policy from both normative and positive perspectives. Special attention will be given to the strategic implications of international borders for policy makers and managers. Topics include: optimal trade policy, political economy of protection, dispute resolution under NAFTA and the WTO, design of the international financial architecture, exchange rate regimes, skill-focused migration policy, and the international absorption and protection of technological knowledge. Not offered 2018-19.

MGMT-988* Applied Statistics and Econometrics
This course is an introduction to the statistical tools needed to test economic relationships. It is designed so that students can understand empirical research and execute independent research projects of their own. The course starts with a review of statistical inference; next it discusses the general linear regression model, and finishes with some advanced topics. Statistical software packages will be introduced and used throughout the course. Fall. P. Sephton

MGMT-989* Research Project
The aim of this course is to introduce students to the conduct of research. Immediately following MGMT-890/990, students complete a research proposal which is presented formally to faculty and graduate students. Under the supervision of a faculty member, students then devote the Spring and Summer semesters of their first year of studies to carrying out the research outlined in the proposal. Completion of the course requires a written research paper of publishable quality submitted by the end of the Summer Term, and an oral presentation to faculty and graduate students, early in the Fall of the second year of studies.

MGMT-990* Econometrics Methods
This course covers selected topics in the empirical methods of cross-section and panel data analysis. Various econometric techniques are discussed in workshop format to

help students interpret and critically evaluate empirical evidence. Emphasis is placed on practical aspects and application. (Crossed with MGMT-890*). Winter. O. Ivus

MGMT-991* Research Design
This course provides an in-depth critical analysis of a number of important research approaches. The emphasis of the course is on the development and implementation of several research projects representing various research design and data collection considerations. The objective is to provide advanced doctoral students actual experience with design, implementation and analysis of data.

MGMT-992* Management Research Topics
Specialized topics in management research will be covered. The subject matter will vary from year to year depending on the interests of the faculty.

MGMT-993* Teaching and Learning in Management and Business
Introduce graduate students to effective teaching techniques. These include traditional classroom-based teaching, case methods, and research seminars. Effective job talks and career management issues will be covered. Classes require active participation by all students; in addition, opportunities to teach will be provided, followed by peer and professor feedback. This is a 3.0 credit unit course. This course is graded on a Pass/Fail basis.

MGMT-999 Ph.D. Thesis

OTHER COURSES: In addition to courses offered in the School of Business, graduate courses of related Programs within the University may be used to form or complement a student's individual program of study. By way of example, students electing a field in managerial economics will take some course work in the Department of Economics in preparation for their comprehensive field examination. Similar opportunities exist with respect to other fields of specialization.

MATHEMATICS AND STATISTICS

The department offers a selection of courses from the following list each academic year. Course offerings for the current academic year can be found on the Department of Mathematics and Statistics website.

Courses in Mathematics

MATH-800* Seminar
Students are expected to participate in a weekly seminar in which they are required to present material on a topic that relates to their research.

MATH-801* Graph Theory
An introduction to graph theory, one of the central disciplines of discrete mathematics. Topics include: graphs,subgraphs, trees, connectivity, Euler tours, Hamiltonian cycles, matchings, independent sets,cliques, colourings, and planarity.(Offered jointly with MATH-401*.) Three term-hours; lectures.

MATH-802* Enumerative Combinatorics
Enumerative combinatorics is concerned with counting the number of elements of finite sets with prescribed conditions. The techniques covered include inclusion-exclusion, bijective proofs, double-counting arguments, recurrence relations, and generating functions. (Offered jointly with MATH-402.) Three term hours; lectures.

MATH-806* Introduction to Coding Theory
Construction and properties of finite fields. Polynomials, vector spaces, block codes over finite fields. Hamming distance and other code parameters. Bounds relating code parameters. Cyclic codes and their structure as ideals. Weight distribution. Special codes and their relation to designs and projective planes. Decoding algorithms. (Offered jointly with MATH/MTHE 406*.) Three term-hours; lectures.

MATH-812* Topics in Number Theory
Subject matter may vary from year to year. Three term-hours; lectures.

MATH-813* Introduction to Algebraic Geometry
An introduction to the study of systems of polynomial equations in one or many variables. Topics covered include the Hilbert basis theorem, the Nullstellenstaz, the dictionary between ideals and affine varieties, and projective geometry (Offered jointly with MATH 413*). Three term-hours; lectures.

MATH-818* Number Theory and Cryptography
Time estimates for arithmetic and elementary number theory algorithms (division algorithm, Euclidean algorithm, congruences), modular arithmetic, finite fields, quadratic residues. Design of simple cryptographic systems; public key, RSA systems. Primality and factoring: pseudoprimes, Pollard's rho-method, index calculus. Elliptic curve cryptography. (Offered jointly with MATH/MTHE-418*.) Three term hours; lectures.

MATH-827* Introduction to Deterministic Dynamical Systems
Topics include: global properties of flows and diffeomorphisms; invariant sets and dynamics; bifurcations of fixed and periodic points; stability and chaos. (Offered jointly with MATH-427*.) Three term-hours; lectures.

MATH-830* Modern Control Theory
This course covers core topics in modern control theory: Linearization, existence and uniqueness of trajectories for nonlinear and linear systems, the transition matrix,controllability, observability, minimal realizations, feedback stabilization, linear state observers, optimal control theory, the linear quadratic regulator, dynamic programming. (Offered jointly with MTHE-430*.) Three term-hours; lectures.

MATH-834* Optimization Theory and Applications
Theory of convex sets and functions; separation theorems; primal-dual properties; geometric treatment of optimization problems; algorithmic procedures for solving constrained optimization programs;engineering and economics applications. (Offered jointly with MATH-434). Three term-hours; lectures.

MATH-836* Lagrangian Mechanics, Dynamics, and Control
Geometric modelling, including configuration space, tangent bundle, kinetic energy, inertia, and force. Euler-Lagrange equations using affine connections. The last part of the course develops one of the following three applications: mechanical systems with nonholonomic constraints; control theory for mechanical systems; equilibria and stability. (Offered jointly with MATH/MTHE-439*) Three term-hours; lectures.

MATH-837* Topics in Applied Mathematics
Subject matter may vary from year to year. Three term-hours; lectures.

MATH-838* Topics in Mathematical Biology
Subject matter may vary from year to year. Three term-hours; lectures.

MATH-844* Differentiable Manifolds
Differentiable structures, smooth manifolds and submanifolds, immersions and submersions, vector fields and differential forms, orientation and integration, de Rham cohomology. Three term-hours; lectures.

MATH-872* Control of Stochastic Systems
Stabilization and optimization of controlled dynamical systems under probabilistic uncertainty. Topics include: review of probability, controlled Markov chains, martingale and Lyapunov methods for stochastic stability, dynamic programming, partially observed models and non-linear filtering, the Kalman Filter, average cost problems, learning and computational methods, decentralized stochastic control, and stochastic control in continuous-time. (Offered jointly with MTHE- 472*.) Three term hours, fall or winter; lectures.

MATH-874* Information Theory
An introduction to the fundamental principles of the theory of communication. Topics include:information measures, entropy, mutual information, divergence; modeling of information sources, discrete memoryless sources, Markov sources, entropy rate, source redundancy, fundamentals of lossless data compression, block encoding, variable-length encoding, Kraft inequality, design of Shannon-Fano and Huffman codes; fundamentals of channel coding, channel capacity, noisy channel coding theorem, channels with memory, lossless information transmission theorem; continuous-alphabet sources and channels, differential entropy, capacity of discrete-time and band-limited continuous-time Gaussian channels; rate-distortion theory, lossy data compression, rate-distortion theorem, lossy information transmission theorem. (Offered jointly with MATH/MTHE-474*). Three term hours; lectures.

MATH-877* Data Compression and Source Coding
Fundamentals of the theoretical and practical (algorithmic) aspects of lossless and lossy data compression. Topics include: adaptive Huffman coding, arithmetic coding, the fundamental performance limits of universal lossless coding, Lempel-Ziv and related dictionary based methods, the Burrows-Wheeler transform, elements of Kolmogorov complexity theory, rate-distortion theory, scalar and vector quantization, applications to speech and image coding. (Offered jointly with MATH/MTHE-477*.) PREREQUISITE: MATH-874*

MATH-884* Data Networks
This course covers performance models for data networking, delay models and loss models; analysis of multiple access systems, routing, and flow control; multiplexing; priority systems; satellite multiple access, wireless networking, wireless sensor

networks. Knowledge of networking protocols is not required. (Offered jointly with MATH/MTHE-484*.) Three term hours; lectures. PREREQUISITE: STAT-855*

MATH-891* Core Course in Analysis I
This course provides basic knowledge in real and complex analysis at the graduate level on the following topics: Lebesgue measure and integration theory; elementary Hilbert space theory; examples of Banach space techniques. Three term-hours, fall; lectures.

MATH-892* Core Course in Analysis II
This course provides basic knowledge in real and complex analysis at the graduate level on the following topics: basic theory of Fourier transforms; basic elements of spectral theory and Banach algebras; complex analysis. Three term-hours, winter; lectures.

MATH-893* Core Course in Algebra I
This course provides basic knowledge in algebra at the graduate level on the following topics: elementary theory of groups; elementary theory of rings and modules; Galois theory. Three term-hours, fall; lectures.

MATH-894* Core Course in Algebra II
This course provides basic knowledge in algebra at the graduate level on the following topics: representation theory of finite groups through characters; advanced theory of modules; advanced theory of rings. Three term-hours, winter; lectures.

MATH-895* Core Course in Probability Theory
This course provides basic knowledge in probability at the graduate level. Topics will include: basic notions and concepts of Probability Theory; characteristic functions; law of large numbers and central limit theorem; martingales; stochastic processes. Three term-hours, winter; lectures.

MATH-896* Core Course in Mathematical Statistics
This course provides basic knowledge in mathematical statistics at the graduate level. Topics will include: Classical and Bayesian inference, Multivariate Gaussian distribution and its applications in Statistics; decision theory; basic techniques of non-parametric estimation. Three term-hours, fall; lectures.

MATH-898 Master's Project

MATH-899 Master's Thesis Research

MATH-901* Research Institute Course
Advanced topics course, normally offered in the summer term, by a research institute in

Canada or abroad can be taken for credit with the permission of the Supervisor and Coordinator of Graduate Studies and in cooperation with Institute organizers. Grades are assigned on a PASS - FAIL basis.

MATH-902* Topics in Algebra
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-903* Topics in Algebra
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-905* Topics in Algebra
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-912* Topics in Number Theory
Subject matter will vary from year to year. Three term-hours; seminar or reading course.

MATH-913* Topics in Number Theory
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-915* Topics in Number Theory
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-922* Topics in Analysis
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-923* Topics in Analysis
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-925* Topics in Analysis
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-932* Topics in Applied Mathematics
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-933* Topics in Applied Mathematics
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-935* Topics in Applied Mathematics
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-936* Topics in Control Theory
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-937* Topics in Control Theory
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-939* Topics in Control Theory
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-942* Topics in Topology and Geometry
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-943* Topics in Topology and Geometry
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-945* Topics in Topology and Geometry
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-972* Topics in Communication Theory
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-973* Topics in Communication Theory
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-975* Topics in Communication Theory
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

MATH-999 Ph.D. Thesis Research

Courses in Probability and Statistics

STAT-853* Statistical Inference
Decision theory and Bayesian inference; principles of optimal statistical procedures; maximum likelihood principle; large sample theory for maximum likelihood estimates; principles of hypotheses testing and the Neyman-Pearson theory; generalized likelihood ratio tests; the chi-square, t, F and other distributions. (Offered jointly with STAT-463*.) Three term hours; lectures.

STAT-854* Statistical Spectrum Estimation
Many systems evolve with an inherent amount of randomness in time and/or space. The focus of this course is on developing and analyzing methods for analyzing time series. Because most of the common time--domain methods are unreliable, the emphasis is on frequency--domain methods, i.e. methods that work and expose the bias that plagues most time--domain techniques. Slepian sequences (discrete prolate spheroidal sequences) and multi--taper methods of spectrum estimation are covered in detail. (Offered jointly with MTHE-454*.) Three term-hours; lectures.

STAT-855* Stochastic Processes and Applications
Markov chains, birth and death processes, random walk problems, elementary renewal theory, Markov processes, Brownian motion and Poisson processes, queuing theory, branching processes. (Offered jointly with MTHE/STAT-455*.) Three term hours; lectures.

STAT-856* Bayesian Analysis
This course is an introduction to Bayesian analysis and decision theory. Topics covered will include: elements of decision theory; Bayesian point estimation, set estimation, and hypothesis testing; special priors; computations for Bayesian analysis. (Offered jointly with STAT-456.)

STAT-857* Statistical Computing
Introduction to the theory and application of statistical algorithms. Topics may include classification, smoothing, model selection, optimization, sampling, supervised and unsupervised learning. (Offered jointly with STAT-457).

STAT-862* Computational Data Analysis
Introduction to the statistical packages SAS and R; classification; spline and smoothing spline; regularization, ridge regression and Lasso; model selection; resampling methods; importance sampling; Markov chain Monte Carlo; Metropolis-Hasting algorithm; Gibbs sampling; optimization. (Offered jointly with STAT-462.) Three term hours; lectures.

STAT-864* Discrete Time Series Analysis
Autocorrelation and autocovariance, stationarity; ARIMA models; model identification and forecasting; spectral analysis. Applications to biological, physical and economic data. (Offered jointly with STAT-464*.) Three term-hours; lectures.

STAT-865* Quality Management
An overview of the statistical and lean manufacturing tools and techniques used in the measurement and improvement of quality in business, government and industry today. Topics include management and planning tools, Six Sigma approach, statistical process charting, process capability analysis, measurement system analysis. (Offered jointly with STAT-465*.) Three term-hours; lectures.

STAT-871* Sampling and Experimental Design
Simple random sampling; Unequal probability sampling; Stratified sampling; Cluster sampling; Multi-stage sampling; Analysis of variance and covariance; Block designs; Fractional factorial designs; Split-plot designs; Response surface methodology; Robust parameter designs for products and process improvement. (Offered jointly with STAT-471*.) Three term hours; lectures.

STAT-873* Generalized Linear Models
An introduction to advanced regression methods for binary, categorical, and count data. Major topics include maximum-likelihood method, binomial and Poisson regression, contingency tables, log linear models, and random effect models. The generalized linear models will be discussed both in theory and in applications to real data from a variety of sources.(Offered jointly with STAT-473*.)

STAT-886* Survival Analysis
Introduces the theory and application of survival analysis: survival distributions and

their applications, parametric and nonparametric methods, proportional hazards models, counting process and proportional hazards regression, planning and designing clinical trials. (Offered jointly with STAT-486*.) Three term-hours; lectures.

STAT-888 Master's Practicum
Under the guidance of the supervisor, students will carry out a practicum project in a health research group/site and practise biostatistical methods and data analysis, or conduct methodology research in a biostatistical project. Students will summarize the results of the project in a written report that will be reviewed and orally defended.

STAT-898 Master's Project

STAT-899 Master's Thesis Research

STAT-952* Topics in Probability
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

STAT-953* Topics in Probability
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

STAT-955* Topics in Probability
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

STAT-962* Topics in Statistics
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

STAT-963* Topics in Statistics
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

STAT-965* Topics in Statistics
Subject matter will vary from year to year. Three term-hours; Seminar or reading course.

STAT-999 Ph.D. Thesis Research

MECHANICAL AND MATERIALS ENGINEERING

The courses described below represent those available for the current session, but courses are added from time to time. Prospective students should review the Department of Mechanical and Materials Engineering website for the most current list of courses available and term offered.

APSC- 896* Engineering Leadership and Innovation
This course is designed to develop a range of skills essential for engineering professional practice in both the public and private sectors. The course will focus on; Engineering Leadership and Innovation including its application in project management. The course content will be presented through lectures, case studies, panel discussions and an interactive serious game.

MECH-810* Advanced Topics in Manufacturing Engineering
A topical course in manufacturing engineering which deals with some of today's research issues from both a theoretical and pragmatic approach. Research in areas such as Flexible Manufacturing Systems, Computer Integrated Manufacturing, Statistical Quality Control, Group Technology, Just in Time Concepts, Material Removal and Forming Technology, Design for Assemble, etc. are examined based on recent literature and publications. The specific topics to be addressed each year are selected to match the student's research interest and background. Three term-hours; may be given in any term. J. Jeswiet.

MECH-811* Lasers in Manufacturing Applications
Course presents an overview of lasers as they relate to selected manufacturing applications. Topics covered include general principles of laser operation, description of laser types used in manufacturing, and components of laser-based processing systems. Among the applications, laser machining of metals and ceramics, joining of polymers, and laser sintering are examined in greater depth. Analytical and numerical modeling techniques are briefly presented. Students will carry out a survey-based or an experimental project (the latter being subject to instructor's approval and availability of resources). Three term-hours; lectures. G. Zak.

MECH-812* Corrosion and Protection of Metals
Introduction to electrochemistry; thermodynamics and kinetics of corrosion processes; aqueous corrosion; anodic and cathodic processes and passivity; atmospheric corrosion and the role of contaminants; oxidation and the structure and properties of oxide films; conjoint phenomena, impingement, erosion, stress corrosion cracking, fretting,

corrosion fatigue, corrosion control by coatings; inhibition, cathodic protection, and anodic protection; corrosion as a factor in design; corrosion and safety. Three term-hours; M. Shirkhanzadeh.

MECH-816* Energetics & Mechanics of Locomotion
The course covers the following topics: introduction to human locomotion, biomechanics measurements, kinematics, kinetics and mechanical energy of human walking, muscle function and metabolic energetics of human walking, biomechanical devices to assist walking. Course evaluation based on assignments, lab reports, project report, classroom presentations.

MECH-817* Systematic Review Methodology for Product Evaluation
This course provides the skills to undertake a systematic literature review as required by the FDA when seeking approval for a device. Drawing on a clinical model, this course will enable the student to define a question using PICO (population, intervention, comparison, outcome), synthesize quantitative evidence and interpret the results. Three term hours; lectures. T.C. Davies.

MECH-821* Advanced Dynamics of Mechanical Systems
Mathematical modelling of the dynamics of mechanical systems using Newton's Laws, LaGrange's Equation and Hamilton's Equations; linear and non-linear systems; time-domain and frequency-domain solutions; large systems; stability; response to random excitation. Three term-hours; lectures. R.J. Anderson.

MECH-823* Micro-Electro-Mechanical Systems (MEMS)
This course is an overview of the research in MEMS and BioMEMS, particularly including microactuators, microsensors and their applications. Fundamentals of photolithography, wet and dry etching, and surface micromachining will be covered. Design methodologies together with fabrication processes will be emphasized through case studies. A design project will be used to enhance the understanding of the relevant theories that are covered in class. By the end of the course, students will be expected to demonstrate mastery of several different modelling techniques for microsystems and understand the mechanisms of microsystems. Three term-hours; lectures. Y. Lai.

MECH-824* Plasticity
Deformation of solids; analysis of stress and strain; limiting states of stress in solids; theories of mechanical strength; stress-strain and stress-strain rate relations; plane strain; slip line solutions of plastic flow problems; limit analysis. Mechanics of plastic deformation in metalworking processes; friction and lubrication; thermal phenomena. Three term-hours; lectures. J. Jeswiet.

MECH-826* Experimental Vibration and Machinery Analysis
Characteristics of vibration and shock and their effects on mechanical systems and people; sensors and systems for measurement of vibratory displacement, velocity, acceleration and force; spectral analysis including applications to machinery vibration diagnostics; vibration test systems; random vibrations; modal analysis; vibration test standards; stress screening; shock testing. Three term-hours; lectures and laboratory. C. Mechefske.

MECH-827* Biomechanics of Human Joints and Spine
This course will start with a description of the relevant anatomy, followed by the kinematics and kinetics of synovial joints and the spine. Methods of engineering analysis will include motion analysis and different types of modelling. Applications from industrial ergonomics and biomechanical engineering in areas such as low back pain and artificial joint replacement will be discussed. Three term-hours, lectures. G. Dumas.

MECH-828* Biomechanics of Human Gait
An overview of the research in biomechanics of human motion with particular focus on gait analysis. Topics include measuring and analysis techniques, biomechanical modelling, and data analysis techniques. Applications include the study of normal, able-bodied gait, and the evaluation of gait pattern changes associated with osteoarthritis, and total knee replacements. The course has a laboratory component that is used to give the student the opportunity to apply the theory covered in class. Three term-hours, lectures. K. Deluzio.
PREREQUISITE: permission of the instructor

MECH-829* Tissue Mechanics
Methods of characterizing biological tissues for the Mechanical Engineer with no previous biology background. Histology of ligament, tendon, cartilage and bone. Viscoelasticity and classical elasticity. Current models of ligament and tendon (Fung's quasi-linear model). Linear anisotropic elastic model for bone and cartilage. Theories for strength and failure mechanisms. Three term-hours, lectures. J.T. Bryant

MECH-830* Experimental Fluid Dynamics
A review of measurement theory including: static and dynamic characteristics of signals, spectral analysis with filtering methodologies, response of systems, and statistical/uncertainty analyses. Subsequently the course then provides insight into traditional as well as contemporary measurement techniques in fluid dynamics ranging from single-point scalar/vector measurements through to spatially resolved volumetric reconstructions. To conclude, post-processing and data-manipulation strategies for such

contemporary data sets along with a discussion of future concepts will be presented. Three term hours, lecture. D.E. Rival.

MECH-831* Convective Heat Transfer
Navier-Stokes and energy equations; boundary layer equations; integral boundary layer equations; similarity and numerical solutions for laminar forced convection; integral equation solutions for laminar forced convection; laminar flow in pipes; heat transfer in turbulent forced convection; free convection; combined forced and free convection; heat transfer with change of phase; heat exchangers (Formerly MECH-931*). Three term-hours, lectures. P.H. Oosthuizen

MECH-832* Combustion Dynamics
This course begins with a thorough review of the fundamental principles of combustion such as heat of reaction, chemical equilibrium, and chemical kinetics. Combustion aspects related to explosion phenomena such as flame acceleration, detonation wave and blast wave propagation are then covered. Finally, the single degree-of-freedom response of mechanical structures to blast wave loading will be discussed, and explosion damage mitigation techniques will be presented. Three term-hours, lectures. G. Ciccarelli.

MECH-833* Topics in Single Phase Convective Heat Transfer
This course deals with aspects of Convective Heat Transfer not considered in course MECH-831. The main topics considered are: Introduction to Convective Heat Transfer, Natural Convection, Mixed Convection, Convective Heat Transfer in Porous Media, Enhanced Convective Heat Transfer, Nano Heat Transfer, Convective Heat Transfer in High Speed Flows, Interaction of Convection with Other Modes of Heat Transfer. Three term-hours; lectures. P.H. Oosthuizen.

MECH-834* Fundamentals of Solar Energy Conversion for Heating and Cooling Applications
This course presents the fundamental principles of solar energy conversion, storage and distribution. Both photovoltaic and thermal energy conversion systems will be introduced; however the primary focus of the course will be on solar thermal systems for heating and cooling applications. Topics covered include the nature and prediction of the solar resource, solar collector design and performance, thermal storage, heat transport and distribution. The modeling and design of complete solar heating and cooling systems will be studied and exercises completed. Students will be required to complete a major project related to one of the above topics. Course lecture material will be augmented with laboratory exercises. S.J. Harrison.
PREREQUISITE: permission of the Instructor

MECH-835* Introduction to Computational Fluid Dynamics
Objective of this course is to give students a basic understanding of the potential and limitations of Computational Fluid Dynamics (CFD), learn the fundamentals of CFD codes, find solutions for test problems, and run commercial software in a competent and critical manner. Three term hours, lectures. U. Piomelli. PREREQUISITE: Permission of instructor.

MECH-836* Radiative Heat Transfer
This course covers the following topics related to heat transfer by thermal radiation: fundamentals of thermal radiation, blackbody thermal radiation, radiative properties of real materials, surface to surface exchange of diffuse radiation, numerical solution of diffuse radiation problems, radiation with conduction and convection, radiation in absorbing, emitting and scattering media, gas volume radiation, surface-volume radiation selected applications. Three term hours, lectures. A.M. Birk

MECH-837* Transport & Kinetics with Application to Fuel Cells
The fundamentals of transport phenomena and reaction kinetics are considered and applied to fuel cells, with a view to a mechanistic understanding of fuel cell operation and limitations. Material covered includes the basic axioms of mechanics (conservation of mass, momentum, energy and charge) presented in indicial notation and applied to porous media. Emphasis is placed on the description of porous materials and the implications of porous media on transport, including the notion of effective transport coefficients. Ion transport in solid and polymer electrolytes due to electrochemical potential differences is considered. Diffusion models covered include Fick's law, Stefan Maxwell and Knudsen. Electrochemical reaction kinetics and mechanism are covered including rate-limiting steps, exchange current density and the fundamental definition of overpotential. The course will include individual projects. J. Pharoah.

MECH-838* Civil Aviation and the Environment
Effects that the operation of civil aircraft have on the environment are considered and means of reducing these effects are considered. The generation of noise, local air pollution, the effect of engine emissions during cruise and the effect of contrails are discussed in detail. Potential changes in the design of aircraft and engines and in the way in which they are operated in order to reduce environmental effects are considered. Attention is given to the difficulties encountered in trying to balance conflicting environmental demands in arriving at solutions. While the course concentrates on the environmental effects of civil aviation, the material covered should provide a good basis for dealing with other complex environmental problems that arise in engineering. Three term-hours; P.H. Oosthuizen.

MECH-839* Introduction to Turbulence
This course is an introduction to the study of turbulence, covering its mathematical description, its physical features and the modelling of turbulent flows. The course is suitable for MASc and PhD students with a background in advanced fluid dynamics and numerical methods.Three term-hours; lectures. Taught in alternate years. U. Piomelli.
PREREQUISITE: Permission of the instructor.

MECH-840* Selected Topics in Thermal Fluid Systems
This course is limited to Master's students who already have a good background in the fundamental topics related to their areas of study and are interested in other areas not offered in existing graduate courses. Topics will be selected from the general areas of heat transfer, fluid mechanics and thermodynamics. The course will include lectures, open discussions and directed study. The course content for a student or group will be specified in writing at the beginning of the course and cannot be the same as their thesis research topic. The course mark will be based on reports and/or presentations and/or exams. Instructors: Various faculty members from within the Department of Mechanical and Materials Engineering.
EXCLUSIONS: MECH-842*, MECH-843*, MECH-844*

MECH-841* Net-Zero Energy Buildings and Communities
An introduction to what is meant by net-zero energy building or community, to how the net-zero energy state can be achieved, and to the considerations that need to be taken into account in planning and designing a net-zero energy building or community is provided. Building envelopes, building integrated photo-voltaic systems, bore-hole energy systems, day-lighting, ventilation, solar air-conditioning, energy storage, and social and economic factors are considered. Three term hours; lectures.

MECH-842* Selected Topics in Manufacturing and Design
This course is limited to Master's students who already have a good background in the fundamental topics related to their areas of study and are interested in other areas not offered in existing graduate courses. Topics will be selected from the general areas of dynamics, manufacturing and design. The course will include lectures, open discussions and directed study. The course content for a student or group will be specified in writing at the beginning of the course and cannot be the same as their thesis research topic. The course mark will be based on reports and/or presentations and/or exams. Instructors: Various faculty members from within the Department of Mechanical and Materials Engineering.
EXCLUSIONS: MECH-840*, MECH-843*, MECH-844*

MECH-843* Selected Topics in Biomechanical Engineering
This course is limited to Master's students who already have a good background in the fundamental topics related to their areas of study and are interested in other areas not offered in existing graduate courses. Topics will be selected from the general areas of biomechanical engineering. The course will include lectures, open discussions and directed study. The course content for a student or group will be specified in writing at the beginning of the course and cannot be the same as their thesis research topic. The course mark will be based on reports and/or presentations and/or exams. Instructors: Various faculty members from within the Department of Mechanical and Materials Engineering.
EXCLUSIONS: MECH-840*, MECH-842*, MECH-844*

MECH-844* Selected Topics in Materials Engineering
This course is limited to Master's students who already have a good background in the fundamental topics related to their areas of study and are interested in other areas not offered in existing graduate courses. Topics will be related to the structure, properties, processing and/or performance of materials. The course will include lectures, open discussions and directed study. The course content for a student or group will be specified in writing at the beginning of the course and cannot be the same as their thesis research topic. The course mark will be based on reports and/or presentations and/or exams. Instructors: Various faculty members from within the Department of Mechanical and Materials Engineering.
EXCLUSIONS: MECH-840*, MECH-842*, MECH-843*

MECH-846* Fluid Systems Analysis
This course provides an introduction to analysis of fluid flows at the masters level. Derivation of the transport equations is completed for arbitrary control volumes in both vector and tensor forms. Inviscid flows are explored to illustrate the separate effects of inertial and viscous forces, including development of Joukowski airfoil models. Exact and approximate solutions are developed for steady and unsteady laminar flows. Boundary Layer solutions are developed by differential and integral analysis. The similarity of transport equations for thermal energy and concentration are illustrated. On completion of the course, students will be well prepared for specialized courses in convective heat transfer, turbulence, and computational fluid mechanics. Three term-hours; lectures. R.W. Sellens.

MECH-847* Energy & Society
This course is a discussion course focused on fundamental ideas in energy and the social context of energy. It will feature an introduction to Energy Systems and fundamental thermodynamic tools to analyze these systems. Of particular emphasis

will be the social context of energy: how societies emerge, organize and thrive or fail according to their energy supply. Factors which contribute to societal responses to changing contexts will also be discussed. In class participation is an essential element of this course.Three term-hours; lectures. J. Pharaoh.
PREREQUISITE: Permission of the instructor

MECH-848* Measurement Systems I
This course focusses on practical measurement systems for masters students in mechanical engineering.On completing this course students will be able to: Select, install, test, and program a micro controller system for data acquisition and control; Select, analyze the performance of, and apply transducers for temperature; pressure; stress, strain and force; position, velocity and acceleration; Apply basic signal conditioning in analog and digital domains; Analyze data to draw conclusions from measurements and uncertainty analysis. Conceive, Design, Implement and Operate a complete measurement system as part of a course project. Three term-hours; lectures and lab. R.W. Sellens

MECH-851* Materials Characterization
This course covers the theory and practice of materials characterization by X-ray and electron microscopy techniques. Theory includes interaction of materials with X-rays and electrons, diffraction and image formation. The following topics are discussed and illustrated by laboratory investigations: determination of crystal structure, microchemical analysis, characterization of lattice defects, determination of texture and measurement of residual stresses. Three term-hours; lecture and laboratory.

MECH- 852* Mechatronics for Automation
This course covers the tools and techniques needed to design and control assembly automation machines and their machine vision-based inspection systems. The issues that arise when interfacing different components to form complex mechatronic systems are studied. Course content will be reinforced with an individual project and group laboratories.

MECH-857* Robotics
This course will cover kinematics of serial and parallel architecture robots; as well as the geometric, kinematic, static and dynamic criteria required for designing robot manipulators. The course will also include projects on advanced robotics topics and will conclude with the presentation of these projects, at least two presentations per student. Three term-hours; lectures and seminars. L. Notash.

MECH-861* Principles of Metal Forming
This course examines experimental, analytical and numerical methods employed for evaluating and predicting forming limits in a variety of industrial metal forming operations. The concept of a forming limit diagram (FLD) is introduced and related to classical theories for plastic instability and failure. Constitutive equations of elastic-plastic flow are derived using a continuum mechanics approach, with additional discussion regarding issues of plastic anisotropy, damage accumulation, localization and material length scales. Three term-hours. K. Pilkey.

MECH- 863* Materials Selection in Design
This course presents the concept of materials selection as an integral part of the mechanical engineering design process. Materials selection addresses a number of issues: the choice of material; the method of part manufacture; potential modes/mechanisms of failure; as well as the tailoring of material microstructure to obtain optimal properties and in-service performance. Background topics will include mechanical engineering design, solid mechanics, engineering component design, and materials science and engineering. Material selection methodologies will range from conventional, holistic approaches to the deterministic method of Ashby. Course content will be reinforced through case studies that consider a variety of material classes.

MECH-864* Engineering Analysis
Methods for formulating mathematical models for engineering problems; examples drawn from dynamics, elasticity, fluid mechanics, heat transfer, and electro-mechanics; lumped-parameter and continuum models; variational techniques; boundary conditions and their effects on the character of the model; techniques for obtaining approximate solutions; methods for casting models into forms appropriate for solution on digital computers. Three term-hours, lectures. R.J. Anderson.

MECH-874* Functional Ceramics
This course is designed to provide fundamental understanding of the relationship between the crystallographic and microstructural properties of functional ceramics and their properties and application. The emphasis is placed on the mechanisms of conduction in ionic solids, semiconductors and superconductors along with the structure, properties and application of ferroelectric, magnetic and optical materials. The breadth and importance of this class of ceramics in modern electronic industries is reviewed. This course is offered in conjunction with MECH-474, but has additional reading and work assignments. Three term-hours. V.D. Krstic.
EXCLUSION: MECH-474

MECH-875* Structural Ceramics
This course covers fundamental understanding of the mechanical response of ceramics and brittle materials subjected to external stress. The emphasis is placed on developing the relationships between microstructure and mechanical properties in ceramics and brittle materials. Topics covered in this course include linear-elastic behaviour, the role of crack-opening displacement in our understanding of the effects of porosity, grain size and cracks on strength and toughness, as well as the role of residual stresses in the design of super strong materials. The structure and mechanical properties of nano-crystalline ceramics and metals will also be covered. This course is offered in conjunction with MECH-475, but has additional reading and work assignments. Three term-hours.
EXCLUSION: MECH-475

MECH-876* Science of Sintering and Power Processing
This course is designed to combine theories of mass transfer, consolidation and microstructural development in particulate materials. Specifically, the concept of neck formation, the driving force for sintering and mechanisms of sintering will be discussed and applied to specific systems. Solid state, liquid phase and reaction sintering will be covered along with recent examples of sintering in oxide, carbide and nitride ceramics. Three term-hours.

MECH-878* Dislocation Theory
This course attempts to cover the basic derivations from elasticity theory, the properties of dislocations in crystalline materials, and their role in inelastic material behaviour. This introduction should enable one to comprehend, examine, and criticize current literature on the mechanical behaviour of materials. Topics include: a brief introduction to applied elasticity theory; elastic stress fields of dislocations and their interactions with external ones; the role of a particular crystal structure on the properties and motion of dislocations. The use of dislocation mechanics in the theories of creep, fracture, and yield points will be discussed along with other topics as time permits. Three term-hours. B. J. Diak.

MECH-883* Nuclear Materials
A nuclear reactor presents a unique environment in which materials must perform. In addition to the high temperatures and stresses to which materials are subjected in conventional applications, nuclear materials are subjected to various kinds of radiation that affect their performance, and often this dictates a requirement for a unique property that is not relevant in conventional applications. The effects of the radiation may be direct or indirect. This course considers materials typically used in nuclear environments, the unique conditions to which they are subjected, the basic physical

phenomena that affect their performance and the resulting design criteria for reactor components made from these materials. This course is offered in conjunction with MECH-483*, but has additional assignments and reading. Three term-hours, lectures.
EXCLUSION: MECH-483*

MECH-884* Topics in Materials Engineering
A timely topic of interest to materials engineers will be presented. The topics will vary from year to year. Three term-hours, lectures.

MECH-892* Industry-Linked Project (Part 1)
Students work on individual one-term research or development projects. Each project is defined by the academic project supervisor. The project is linked to a supporting company partner. Course evaluation is based on a final written report (typically 30-40 pages) and an end of term seminar presentation. Instructors: Various faculty members from within the Department of Mechanical and Materials Engineering. This course is graded on a Pass/Fail basis.
EXCLUSIONS: MECH-898 - Project, CMAS-898 – Project

MECH-893* Industry-Linked Project (Part 2)
Students work on individual one-term research or development projects that are the natural progression of projects started in MECH-892*. The project is linked to a supporting company partner. Course evaluation is based on a final written report (typically 50-60 pages) and an end of term seminar presentation. Instructors: Various faculty members from within the Department of Mechanical and Materials Engineering. This course is graded on a Pass/Fail basis. PREREQUISITE: MECH 892 – Industry-Linked Project (Part 1)
EXCLUSIONS: MECH-898 - Project, CMAS-898 – Project.

MECH-894* Internship
Students work on a one-term (typically summer) internship at a sponsoring company site. The internship involves the student continuing with the same project work started in MECH-892 and continued throughout MECH-893*. The work will typically be conducted exclusively at the supporting partner company site. Course evaluation is based on a final written report (typically 40-50 pages) and an end of term project seminar presentation. Instructors: Various faculty members from within the Department of Mechanical and Materials Engineering. PREREQUISITE: MECH-893* – Industry-Linked Project (Part 2)

MECH-895* Industrial Internship for M.Eng.
The industrial internship involves spending 4 months in a paid industrial internship

position in industry, or government. Successful completion of the course requires submission of a report on the industrial project to be submitted on the last day of the internship. Each project must be approved by the academic supervisor. Career Services manages the non-academic aspects of the course. This course is open only to Materials and Mechanical Engineering (MME) M.Eng. students. Permission of MME M.Eng. Coordinator is required for registration. This course is graded on a Pass/Fail basis. EXCLUSIONS: MECH-892,* MECH-893*, MECH-894*

MECH-896* Professional Development for MEng Students
This course is designed to develop professional skills that expand on a student's existing technical and non- technical skills, as relevant to a future career in engineering. The topics covered will encompass aspects of project management; leadership and crisis management; written and oral communication; engineering integrity and ethics; and social responsibility. A key feature of the course will be the use of a simulation game in project management for both instruction and assessment. This course is open only to MEng students. Three term-hours; lectures and seminars. Instructor TBA. PREREQUISITE: Permission of the instructor.

MECH-897, 997 Graduate Seminar
Each research full-time graduate student is required to regularly attend the graduate seminar program and to give at least one seminar during their program at Queen's. M.Sc./M.Sc.(Eng.) students are required to take MECH-897 and Ph.D. students are required to take MECH-997. The content of the seminar is to be developed in cooperation with the student's supervisor. The seminar will be evaluated by assigned faculty and a pass/referred decision will be recorded. The student must obtain a pass grade to clear this course requirement. The evaluation process for the seminar is defined in the departmental procedures. This course carries no course credit but is a degree requirement in the Department of Mechanical and Materials Engineering.

MECH-898* Master's Project
weight= 3.0 credit units.

MECH-899 Master's Thesis Research

MECH-924* Finite Element Analysis of Non-Linear Solids
This course presents the formulation and use of finite element models for the analysis of a broad range of non-linear solid materials (plastics, metals, elastomers) subject to large deformations. Basic concepts from continuum mechanics (suffix notation, large strain theory, constitutive relations) are covered in order to provide a basis for the formulation of these models and for the interpretation of results. Testing procedures for the

determination of non-linear material properties, required for model input, are also covered. Example analyses are conducted with commercial non-linear finite element code. Three term-hours; lectures. I. Y. Kim.
PREREQUISITE: CIVL-821* or equivalent.

MECH-932* Advanced Topics in Convective Heat Transfer Analysis
This course is, basically, a continuation of MECH-931* but may be taken by any student who has had adequate preparation. Among the main topics considered are: Analysis of laminar and turbulent free convective flows; local similarity methods in heat transfer; heat transfer with film condensation; prediction of turbulent Prandtl numbers; mixed (or combined) convection; combined heat and mass transfer; heat transfer in compressible flows. Three term hours, lectures. P.H. Oosthuizen

MECH-934* Computational Fluid Dynamics II
The objective of this course is to teach students to understand the potential and limitations of Computational Fluid Dynamics (CFD), develop advanced solution methods for fluid-dynamics problems, and run commercial software in a critical manner. The course begins by presenting various forms of numerical approximations of the governing equations. An in-depth analysis of iterative methods to solve linear systems will follow. Numerical methods for the solution of the Navier-Stokes equations will be presented, with emphasis on numerical stability and on conservation properties. Three term-hours; lectures. U. Piomelli.
PREREQUISITE: permission of the instructor.

MECH-935* Turbulence Simulations
The objective of this course is to analyze numerical techniques for the simulation of turbulent flows. Emphasis will be placed on the understanding of the role of modeling and numerical errors, and on the development of "best practices" to validate and establish confidence in the numerical results. The course begins with a review of the governing equations for turbulent flows, of the role of turbulent eddies, and of the statistical quantities used to characterize turbulent flows. The important features of numerical methods will then be examined.An extensive review of the potential, requirements, achievements and limitations of direct simulation, large-eddy simulation and solution of the Reynolds-Averaged Navier-Stokes equations will form the core of the course. Time permitting, additional topics such as Lagrangian particle tracking, or applications to compressible flows will be covered. U. Piomelli.
PREREQUISITE: permission of the instructor.

MECH-936* Radiative Heat Transfer
This course covers the following topics related to heat transfer by thermal radiation:

fundamentals of thermal radiation, blackbody thermal radiation, radiative properties of real materials, surface to surface exchange of diffuse radiation, numerical solution of diffuse radiation problems, non-diffuse and specular radiation from surfaces, spectral radiation, radiation with conduction and convection, radiation in absorbing, emitting and scattering media, gas volume radiation, surface-volume radiation, selected applications. Three term hours, lectures. A.M. Birk.

MECH-940* Selected Topics in Thermal-Fluids Engineering
This course is limited to those PhD students who already have a good background in the fundamental and advanced topics related to their research and are interested in other areas not offered in existing graduate courses. Topics can be selected from the general areas of heat transfer, fluid mechanics and thermodynamics. The course will include lectures, open discussion and directed study. The course content for a student or group must specified in writing at the beginning of the course and cannot be the same as their thesis research topic. The course mark will be based on reports and/or presentations and/or exams. Instructors: Various faculty members from within the Department of Mechanical and Materials Engineering.
EXCLUSIONS: MECH-942*, MECH-943*, MECH-944*

MECH-941* Turbulent Flow
Introduction; Reynolds averaging; turbulent transport equations; turbulence modelling; statistics and dynamics of turbulence; turbulent diffusion; structure of turbulent flows; numerical and experimental methods. Three term-hours; lectures. A. Pollard.

MECH-942* Selected Topics in Dynamics, Manufacturing and Design
This course is limited to PhD students who already have a good background in the fundamental and advanced topics related to their research and are interested in other areas not offered in existing graduate courses. Topics will be selected from the general areas of dynamics, manufacturing and design. The course will include lectures, open discussions and directed study. The course content for a student or group will be specified in writing at the beginning of the course and cannot be the same as their thesis research topic. The course mark will be based on reports and/or presentations and/or exams. Instructors: Various faculty members from within the Department of Mechanical and Materials Engineering.
EXCLUSIONS: MECH-940*, MECH-943*, MECH-944*

MECH-943* Selected Topics in Biomechanical Engineering
This course is limited to PhD students who already have a good background in the fundamental and advanced topics related to their research and are interested in other areas not offered in existing graduate courses. Topics will be selected from the general

areas of biomechanical engineering. The course will include lectures, open discussions and directed study. The course content for a student or group must specified in writing at the beginning of the course and cannot be the same as their thesis research topic. The course mark will be based on reports and/or presentations and/or exams. Instructors: Various faculty members from within the Department of Mechanical and Materials Engineering.
EXCLUSIONS: MECH-940*, MECH-942*, MECH-944*

MECH-944* Selected Topics in Materials Engineering
This course is limited to PhD students who already have a good background in the fundamental and advanced topics related to their research and are interested in other areas not offered in existing graduate courses. Topics will be selected from the general areas of materials engineering. The course will include lectures, open discussions and directed study. The course content for a student or group will be specified in writing at the beginning of the course and cannot be the same as their thesis research topic. The course mark will be based on reports and/or presentations and/or exams. Instructors: Various faculty members from within the Department of Mechanical and Materials Engineering.
EXCLUSIONS: MECH-940*, MECH-942*, MECH-943*

MECH-984* Modeling the Deformation of Crystalline Solids
Descriptions of crystal plasticity from continuum mechanics to lower length scales are examined. Specifically, analytical methods and computational tools are developed to describe the microstructural evolution and stress response to deformation of single and polycrystalline metals. Specific topics include dislocation micro-mechanics and microstructural evolution, constitutive relations, large strain and texture evolution, failure and fracture, and temperature and rate effects. Three term-hours; lectures. B.J. Diak and A.K. Pilkey. PREREQUISITES: MECH-861*, MECH-878*

MECH-999 Ph.D. Thesis Research

ADMI Courses - Technology and Processes Stream

DM-810* Intelligent Manufacturing
The objectives of this course are to develop a basic understanding of machine intelligence and explore modern tools in designing intelligent manufacturing systems. Through the lectures, on-site visit, reading assignments, and course project(s) the participants will examine how knowledge-based systems (KBSs) and learning systems can effectively improve the performance of machine tools, work cells, and overall manufacturing enterprises. At the end of the course each student should be able to:

- Identify the basic components of manufacturing automation
- View modern manufacturing automation as an intelligent system
- Summarize the benefits of flexible manufacturing and open-architecture controllers
- Describe how laser material removal processes can improve product quality
- Understand how knowledge-based system (KBS) technology can improve manufacturing enterprises
- Appreciate the role of knowledge acquisition in designing intelligent automation
- Describe the basic operation of artificial neural networks (ANNs)
- Design simple neural networks for signal processing, control, and pattern classification applications
- Understand the essentials of fuzzy sets and systems
- Apply fuzzy logic to intelligent control, production planning and scheduling
- Evaluate object oriented and relational data bases
- Describe fuzzy data mining and clustering

(Lead Instructor: George Knopf, Western Ontario)

DM-811* Design for Manufacturability

Design for Manufacturability (DFM) involves a variety of systematic design approaches that ensure all elements of the product life-cycle from conception through to final disposal are addressed by the engineer during the product design process. In this course, the participants will develop an understanding of the various tools and techniques used to design high-quality products at the lowest possible cost. General topics to be covered in the course include: Design for Manufacture (DFM): Product life cycle; engineering design methods; general approaches to DFM; integrating design and manufacturing data; managing the engineering design process; organizational barriers to DFM. Design for Competitive Advantage: Design to cost; time-to-market; time-to-breakeven; design to value; mass customization. DFM and Quality Engineering: Customer needs and expectations; Quality Function Deployment (QFD); product and process FMEA (Failure Mode and Effects Analysis); Taguchi methods (TM). Design for X (DFX): Design for assembly (DFA); design for reliability; design for environment; design for human factors; software tools for DFM. (Lead Instructor: George Knopf, Western Ontario)

DM 812* Finite Element Analysis for Design Engineers

A course on Finite Element Analysis (FEA) as a productivity tool. Topics covered include FEA powers and shortcomings, avoiding common pitfalls and misconceptions, alternate and preferred modelling approaches, reliability of results, integrating FEA with other Computer Aided Design (CAD) tools and finally streamlining FEA and CAD with FEA oriented Solid Modelling practices. (Lead Instructor: R. Buchal, Western Ontario)

DM-814* Rapid Mechanical Design

Rapid Mechanical Design addresses all aspect of mechanical design, including consideration for end-of-life issues, with the focus and emphasis of the course being on rapid product development. In this course, the participants will be introduced to the various state-of-the-art methodologies and off-the-shelf tools and facilities for rapid design. The course will have an introductory section on a limited set of classical design topics in order to prepare the students for the in-depth discussion of the advanced topics on rapid prototyping.

The introductory topics will include: Manufacturing Management Strategies, Concurrent Engineering, Conceptual Design, and Design for X. The advanced rapid-design topics are categorized into virtual and physical prototyping. Virtual prototyping topics include: Geometric Modeling (including major CAD software packages), Computer-Aided-Engineering (CAE) Analysis, Engineering Optimization, Design of Experiments, and Virtual Reality. Physical prototyping topics include: Introduction to Polymerization, Sintering, Casting, and Chemical Machining, Material-Additive Layered Prototyping (including Photolithography, Sintering, Deposition, Lamination, and Laser-Induced-Fusion Based Rapid-Prototyping Systems, Material-Removal-Based Prototyping, and Reverse Engineering. (Lead Instructors: Beno Benhabib, Toronto, Gene Zak, Queen's)

DM-816* Design for Innovation

This course will explore the role of engineering within the collaborative innovation process from an application perspective, as well as the engineering interface with others in the innovation chain. Drawing on proven techniques, it will increase competency in integrated design thinking and intrapreneurship to elevate project success rate. (Lead Instructor: David Strong, Queen's**)**

DM-817* Ergonomic Design

This course provides an overview of ergonomic problems that are addressed in engineering design: including biomechanical, physical and physiological issues. Case studies will range form the design of vehicle cockpits to process control rooms, from industrial manual materials handling tasks to human direct robots, and from domestic tools to biomechanical devices. Specific topics include: anthropometry, work space design, environmental conditions (light, noise, humidity, temperature, motion), physiology, materials handling capacity, gender issues, tool design, product design and structured ergonomic design evaluation techniques.
(Lead Instructor: Tim Bryant, Queen's)

DM-822* Mechatronics Engineering
Mechatronics is the integration of mechanical, electrical, computer and control engineering. This course deals with the analytical tools required to design, model, analyze and control mechatronic systems. Properties of linear and nonlinear systems, system identification methods, process modelling, sensor and actuators, computer interfacing, computer control of machines and processes (PLC and PC based). Laboratories will include PLC based automation applications and PC based advanced robotics. (Lead Instructor: Brian Surgenor, Queen's)

DM-824* Materials Selection in Design
The concept of materials selection as an integral part of the design process is presented. Issues addressed include: choice of material; method of manufacture; failure modes; tailoring of microstructure to obtain optimal properties and in-service performance. Content will be reinforced through case studies that consider a variety of material classes.

DM-826* Advanced Industrial Energy Management
An overview of industrial energy management given. The advanced technical procedures required for assessing energy saving opportunities (ESOs) in industrial equipment and systems are covered. Both new and existing equipment are considered. A review of heat transfer, fluid mechanics and thermodynamics is given to support the analysis of various ESOs.

ADMI Courses - Business and Management Stream

DM-863* Financial & Managerial Accounting
Whether working in the public or private sector, engineers are constrained by financial realities. Knowledge of accounting - how it works, its assumptions, and its usefulness - is an essential prerequisite to informed to informed participation in business decision-making. The purpose of this course is therefore to provide a sound basic understanding of accounting - the "language of business" - and to develop skills in the interpretation and use of accounting information. The course will provide a thorough understanding of how accounting information is used in organizations. We briefly consider reporting to external parties (financial accounting), and consider in more depth the measurement of product and activity cost (cost accounting), and the use of cost information for decision-making, planning, budgeting, and the measurement of performance (management accounting).
(Lead Instructor: David Sharp, Western Ontario)

DM-864* Principles of Technical Communication
The focus of this course is mastery of the fundamental elements of all effective professional communication: assessing the communicative situation, understanding the needs and expectations of the audience, creating an effective and suitable message, and projecting confidence and competence through an appropriate communication style. The course combines theoretical understanding with practical application in four areas of communicative competence: reading, writing, listening, and speaking. Students will prepare and present a variety of messages and will be involved in the critical appraisal of the messages of others.
(Lead Instructor: Jennifer MacLennan, Western Ontario)

DM-865* Business to Business Marketing
The objectives of the course are to provide an introduction to the basic theories and concepts in marketing, with an emphasis on businesses marketing to other businesses (B2B marketing); to develop an effective decision- making framework to address practical problems and issues in marketing; to illustrate the need to integrate marketing decision-making with the other functional areas within an organization; and to offer specific insights into selected marketing contexts; e.g., services, new/high technology, developing and managing relationships, and marketing in the global environment. Emphasis will be placed on e-business and how the Internet and the World Wide Web have greatly changed the role, efficiency and effectiveness of the marketing function, especially in the business-to-business marketplace.
(Lead Instructor: David Blenkhorm, Western Ontario)

DM-872* Engineering Leadership
This course sets out to build on engineering leadership skills and to enhance methods for leading teams. Common leadership challenges will be addressed such as change management and vision setting. The elements of leadership include: dependability, resourcefulness, strategic thinking as well as organizational, communication and teamwork skills.

DM-881* Technical Entrepreneurship & Innovation
Technological entrepreneurship is more than having a good idea and a solid business plan, it is a process intimately connected to new product innovation and design. The steps required for successful introduction of a new product will be addressed: identification, evaluation and selection of opportunities; planning, financing and executing the new venture.

DM-885* Advanced Project Management
Advanced Project Management builds from the basic tools of project management to

introduce participants to the reality of managing projects within the context of engineering organizations that can be complex, where multiple projects may be in place, where membership is drawn from a variety of specialization's and individual differences abound and where team-based functioning is the norm. The course will address issues such as management of multiple projects, individual differences, project leadership, working in teams, and change management. Case studies of managed projects will be used in the course.
(Lead Instructor: Harvey Kolodny, Toronto)

DM-890* Operations and Supply Chain Management
This course has three instructional objectives: (i) acquire, understand and apply general knowledge of operations and supply chain management; (ii) advance managerial insights from both the C-suite and frontline points of view with regards to the value to be realized through efficient and effective work-related efforts; and (iii) enhance confidence in addressing operational and supply chain issues. (Course Leader: David Barrett, Western University)

UNENE (University Network of Excellence in Nuclear Engineering)

UN-806* Selected Topics in Engineering Physics

UNENE course number = EP806

The course covers power reactor fuel design/performance & safety aspects; complements Eng. Physics/UNENE courses on reactor core/safety design/hydraulics; includes fissile/fertile fuels/burnup effects/fuel production/quality assurance/CANDU fuel tech. specifications/thermal conductivity/fuel chemistry/restructuring/grain growth/fission product behaviour/defect detection/ performance in operation/channel behaviour in design basis & severe accidents. Instructor: Staff /tba.

UN 860* Industrial Research Project, UWO

UNENE course number = UN 0600

If they so elect, candidates for the M. Eng. (Nuclear Engineering) Degree may spend approximately four months in an industrial laboratory carrying out an industry-oriented project under the supervision of a suitably qualified staff scientist. Usually there is also a university co-supervisor. The Department will attempt to arrange an industrial project in consultation with the candidate and through negotiation with the candidate's employer. A satisfactory project topic and appropriate arrangements are required for the project to be approved by the Department and it is possible that in

some cases this may not be feasible. Upon completion, the candidate will submit a substantial report on the project and make a presentation on it at the university. The industrial research project can only be undertaken after at least half the required courses have been taken. The industrial research project counts as two half courses. University of Western Ontario / Staff

UN 861* Control, Instr. Elec. Systems

UNENE Course number = UN 0601
This course covers the basic control, instrumentation and electrical systems commonly found in CANDU based nuclear power plants. The course starts with an overall view of the dynamics associated with different parts of the plant, i.e. reactor, heat transport systems, moderator, steam generator, turbine, and electrical generator. Based on such knowledge, the control and regulation functions in the above systems are then defined. Different instrumentation and measurement techniques are examined, along with control strategies. The time and frequency domain performance characterizations of control loops are introduced with consideration of actuator and sensor limitations. Different controller design and tuning methods and instrumentation calibration procedures are discussed. Two modes of operation of CANDU plants will be analyzed, i.e. normal mode and alternate mode. Advanced control technologies, such as distributed control systems, Field bus communication protocols are introduced in view of their potential applications in the existing and newly constructed CANDU power plants. The electric systems in the CANDU plant will be examined. The modeling of the dynamics and control devices for the generator will be covered in details. The dynamic interaction between the CANDU power plants and the rest of the electric power grid with other generating facilities and various types of load will be studied. University of Western Ontario/J. Jiang.

UN 862* Nuclear Fuel Waste Management

UNENE Course Number = UN 0602

Presently, nuclear fuel waste management involves storage in water pools or dry storage containers at reactor sites. If the fuel is then defined as waste, permanent disposal at an appropriate deep geological site would be considered. This course will describe the physical and chemical properties of the fuel and these approaches to storage and disposal. Key features of the fuel include its chemical and physical structure and properties prior to, and after, in-reactor irradiation, the nature and distribution of radionuclides produced in-reactor, and the chemical and physical properties of the Zircaloy fuel cladding before and after in-reactor exposure. The

principles behind pool and dry storage will be described including the design of storage containers and the chemical and corrosion processes that could influence their long-term integrity. The possible permanent disposal scenarios developed internationally will be discussed, with a primary emphasis on those potentially applicable in Canada. For this last topic, the design and fabrication of waste containers and the processes that could potentially lead to their failure, the properties of engineered barriers within the geological site, the essential geological features of the chosen site, and the computational modeling approaches used in site performance assessment calculations will be described. University of Western Ontario/D. Shoesmith

UN 863* Project Management for Nuclear Engineers

UNENE Course number = UN 0603

Project Management is emerging as perhaps the key core competency in engineering in the 21st century industrial workplace. This course in Project Management will prepare nuclear engineers in the application of this discipline in their work. It is an intensive investigation into the major principles of Project Management slanted towards, but not exclusively about, the management of nuclear engineering projects. The course uses the Project Management Institute's PMBOK (Project Management Body of Knowledge) as a skeleton and expands that coverage with relevant examples from nuclear, software and general engineering. Special emphasis will be placed on Risk Management, particularly in the area of safety-critical projects. The graduate will be well-positioned both to apply the knowledge in their area of engineering and to sit the PMI's PMP examination. The course will be taught by a professional engineer holding the PMP certification, using many case studies from industry and engineering. University of Western Ontario/M. Bennett

UN 870* Industrial Research Project, U. of Waterloo

UNENE course number = UN 0700

If they so elect, candidates for the M. Eng. (Nuclear Engineering) Degree may spend approximately four months in an industrial laboratory carrying out an industry-oriented project under the supervision of a suitably qualified staff scientist. Usually there is also a university co-supervisor. The Department will attempt to arrange an industrial project in consultation with the candidate and through negotiation with the candidate's employer. A satisfactory project topic and appropriate arrangements are required for the project to be approved by the Department and it is possible that in some cases this may not be feasible. Upon completion, the candidate will submit a

substantial report on the project and make a presentation on it at the university. The industrial research project can only be undertaken after at least half the required courses have been taken. The industrial research project counts as two half courses. University of Waterloo/Staff.

UN 871* Engineering Risk and Reliability

UNENE course number = UN 0701

This course presents a broad treatment of the subject of engineering decision, risk, and reliability. Emphasis is on (1) the modelling of engineering problems and evaluation of systems performance under conditions of uncertainty; (2) risk-based approach to life-cycle management of engineering systems; (3) systematic development of design criteria, explicitly taking into account the significance of uncertainty; and (4) logical framework for risk assessment and risk-benefit tradeoffs in decision making. The necessary mathematical concepts are developed in the context of engineering problems. The main topics of discussion are: probability theory, statistical data analysis, component and system reliability concepts, time-dependent reliability analysis, computational methods, life-cycle optimization models and risk management in public policy. University of Waterloo/M. Pandey

UN 872* Power Plant Thermodynamics

UNENE course number = UN 0702
Theoretical and practical analysis of the following with particular reference to CANDU plants:
- STEAM POWER CYCLES: Thermodynamic Processes; Thermodynamic Laws; Superheating and Reheating; Regenerative Feedwater Heating; Moisture Separation and Reheating; Turbine Expansion Lines
- EXERGY AND HEAT TRANSFER: Available Energy Transfer; Exergy Flow Diagrams; Thermo-economic Analysis; Heat Conduction and Convection; Boiling and Condensing; Two Phase Flow
- NUCLEAR HEAT REMOVAL: Reactor Heat Generation; Heat Transfer in Boilers and Condensers; Boiler Influence on Heat Transport System; Boiler Swelling and Shrinking; Boiler Level Control; Boiler Operations. University of Waterloo/ R. Chaplin

UN-873* Nuclear Energy in Society: Regulation and Our Energy Future

UNENE course number = UN 0503

This course combines an in-depth study of regulation of nuclear power reactors with a module on the broad aspects of energy in society. It begins with an overall analysis of a regulated nuclear power industry, including why regulators are needed, their characteristics and qualities, and the impacts on industry of operating in a highly-regulated environment. Using practices from the USA, the UK, and Canada, it compares (through each stage of a plant life-cycle) prescriptive, goal-oriented, and risk informed regulation. Canadian regulatory requirements are explored in depth as a specific example. The final module examines the broader role of energy in society: how it is used, its characteristics, energy mixes, and the specific role of nuclear energy. PREREQUISITE: permission of instructor

UN 880* Industrial Research Project

UNENE course number = UN 0800

If they so elect, candidates for the M. Eng. (Nuclear Engineering) Degree may spend approximately four months in an industrial laboratory carrying out an industry-oriented project under the supervision of a suitably qualified staff scientist. Usually there is also a university co-supervisor. The Department will attempt to arrange an industrial project in consultation with the candidate and through negotiation with the candidate's employer. A satisfactory project topic and appropriate arrangements are required for the project to be approved by the Department and it is possible that in some cases this may not be feasible. Upon completion, the candidate will submit a substantial report on the project and make a presentation on it at the university. The industrial research project can only be undertaken after at least half the required courses have been taken. The industrial research project counts as two half courses. McMaster University / Staff

UN 881* Nuclear Plant Syst. Operations

UNENE course number = UN 0801

System and overall unit operations relevant to nuclear power plants with emphasis on CANDU; includes all major reactor and process systems with nuclear plant simulator; self-study using interactive CD ROM. Two to three class, one-day meetings will be scheduled. McMaster University/G. Bereznai

UN 882* Reactor Physics

UNENE course number = UN 0802

An introduction to nuclear energy and fission energy systems is presented. The energetics of nuclear reactions, interactions of radiation with matter, radioactivity, design and operating principles of fission are presented. Nuclear reactor physics including chain reactions, reactor statics and kinetics, multigroup analysis, core thermalhydraulics and the impact of these topics on reactor design are covered. Special topics such as xenon dynamics, burnup and reactor flux effects on safety are included. McMaster University/E. Nichita

UN 883* Nuclear Reactor Safety Design

UNENE course number = UN 0803

Technology and safety analysis underlying nuclear reactor safety. Topics include: Nature of the hazards; concepts of risk; probability tools and techniques; safety criteria; design basis accidents; case studies; safety analysis technology; human error; safety system design; and general safety design principles. McMaster University/V. Snell

UN 884* Reactor Thermalhydraulics

UNENE course number = UN 0804

Fundamentals of single-phase and two-phase flow, and heat and mass transfer. Nuclear power plant primary heat transport system design and calculations, including design description and characteristics of main components and systems. Simulation methodology and tools, including development and qualification of selected thermal-hydraulics computer codes. Course also covers experimental techniques, facilities and results that describe important thermal-hydraulics phenomena. Course topics include: development of conservation equations and relevant constitutive correlations, flow patterns and boiling heat transport regimes, critical heat flux and pressure drop calculations, description of most important computer codes, description of relevant experimental facilities and results, safety margins and operational safety issues and methodologies. McMaster University/N. Popov

UN 885* Radiation Health Risks and Benefits

UNENE course number = UN 0805

This course is designed to introduce graduate students to recent advances in radiation biology that have direct impact on our understanding of the health risks associated with ionizing radiation. The course will focus on radiation absorption in living tissue and physical and biological processes that influence the consequences of the exposure.

Students will learn about the biological effects from different radiation qualities, doses, and dose rates. The course will address cellular radiation damage and repair mechanisms and introduce students to modern techniques in molecular biology used in accident and emergency biological dosimetry. The material will relate to radiation applications in medicine and industry. No prior knowledge of biology at an advanced level is required. McMaster University/D. Tucker

UN 890* Industrial Research Project, Queen's U.

UNENE course number = UN 0900

If they so elect, candidates for the M. Eng. (Nuclear Engineering) Degree may spend approximately four months in an industrial laboratory carrying out an industry-oriented project under the supervision of a suitably qualified staff scientist. Usually there is also a university co-supervisor. The Department will attempt to arrange an industrial project in consultation with the candidate and through negotiation with the candidate's employer. A satisfactory project topic and appropriate arrangements are required for the project to be approved by the Department and it is possible that in some cases this may not be feasible. Upon completion, the candidate will submit a substantial report on the project and make a presentation on it at the university. The industrial research project can only be undertaken after at least half the required courses have been taken. The industrial research project counts as two half courses. Queen's University.

UN 891* Nuclear Materials

UNENE course number = UN 0901

A nuclear reactor presents a unique environment in which materials must perform. In addition to the high temperatures and stresses to which materials are subjected in conventional applications, nuclear materials are subjected to various kinds of radiation which affect their performance, and often this dictates a requirement for a unique property (for example, a low cross section for thermal neutron absorption) that is not relevant in conventional applications. The effects of the radiation may be direct (e.g., the displacement of atoms from their normal positions by fast neutrons or fission fragments), or indirect (e.g., a more aggressive chemical environment caused by radiolytic decomposition). This course describes materials typically used in nuclear environments, the unique conditions to which they are subjected, the basic physical phenomena that affect their performance and the resulting design criteria for reactor components made from these materials. Queen's University/R. Holt

UN 892* Fuel Management

UNENE course number = UN 0902

Nuclear fuel cycles are studied from mining to ultimate disposal of the spent fuel, including the enrichment processes and the reprocessing techniques, from a point of view of the decision-making processes and the evaluation of the operational and economical consequences of these decisions. For the steps within the fuel cycles, the method of determining the associated costs, in particular those relevant to the disposal of nuclear waste, and the overall fuel cycle costs are described. Burn-up calculations are performed for the swelling time of the fuel within the reactor core. The objectives and merits of in-core and out-of-core fuel management for CANDU Pressurized Heavy Water Reactors (PHWR) and Light Water Reactors (LWR) are analyzed in detail, for the refueling equilibrium as well as for the approach to refueling equilibrium. The course also covers fuel management for thorium-fuelled CANDU reactors and other advanced fuels such as MOX containing plutonium from discarded nuclear warheads, and DUPIC (Direct Use of PWR fuel in CANDU reactors). The fuel management problem is treated as an optimization problem, with objective functions or performance indexes identified, as well as decision variables and appropriate constraints (active and non-active). The course also includes a review of the major work done in this area along with the most important computer codes. Queen's University/ H. Bonin

UN 893* Industrial Research Project, U. of Toronto

UNENE course number = UN 1000
If they so elect, candidates for the M. Eng. (Nuclear Engineering) Degree may spend approximately four months in an industrial laboratory carrying out an industry-oriented project under the supervision of a suitably qualified staff scientist. Usually there is also a university co-supervisor. The Department will attempt to arrange an industrial project in consultation with the candidate and through negotiation with the candidate's employer. A satisfactory project topic and appropriate arrangements are required for the project to be approved by the Department and it is possible that in some cases this may not be feasible. Upon completion, the candidate will submit a substantial report on the project and make a presentation on it at the university. The industrial research project can only be undertaken after at least half the required courses have been taken. The industrial research project counts as two half courses. University of Toronto

UN 894* Reactor Chemistry & Corrosion

UNENE course number = UN 1001

Corrosion and its costs, corrosion measurement, general materials and environment affects. Types of corrosion: uniform, galvanic, crevice, pitting, intergranular, selective leaching, erosion-corrosion, stress-corrosion, hydrogen effects. Corrosion testing: materials selection. Electrochemical principles: thermodynamics, electrode kinetics, mixed potentials, practical applications. High temperature corrosion. Nuclear plant corrosion, fossil plant corrosion, other industrial environments. University of Toronto/D. Lister

MEDICAL SCIENCES

MSCI-800 * Research Methodology
This is a foundation course in which students will conduct a critical review from which they will develop a research proposal. Examples of topics are (but are not limited to): questions relating to basic biomedical or clinical sciences; disease processes; therapeutics; ethical questions in science or medicine; health policy. From this critical review, the student will develop a research proposal to address a specific knowledge gap identified from the literature review.

MSCI-801 Integrated Graduate Clerkship I
This course is a 6-month clerkship in which graduate clerks will be placed in a variety of clinical learning environments. Course content will include an Orientation "Boot Camp", the Nightmares Course (simulation based critical events training), a series of observational clinical rotations which will include ward based experiences, ambulatory clinic experiences, standardized patient clinical experiences and academic interactive seminars. Students will be exposed to a spectrum of medical subspecialties. (6.0 credit units)

MSCI-802 Integrated Graduate Clerkship II
This course is a 6-month clerkship designed for students who have complete the Integrated Graduate Clerkship I. Students will be placed in clinical learning environments with more complex patient presentations, with the expectation that students will demonstrate a higher level of competency related to patient care. Students will be expected to lead discussions and present case studies in the bi-weekly academic seminar sessions. (6.0 credit units)

MSCI-898 Research Project in Medical Sciences
This course will engage the student in a hands-on learning experience in a laboratory setting. The research project will involve experimental design, data collection and analysis, written report and oral presentation. (6.0 credit units)

MICROBIOLOGY AND IMMUNOLOGY

EFFECTIVE 2014-2015, THE COURSES LISTED BELOW OR THE EQUIVALENT ARE UNDER THE DEPARTMENT OF BIOMEDICAL AND MOLECULAR SCIENCES. CURRENT COURSE NUMBERS AND DESCRIPTIONS CAN BE FOUND HERE: COURSES OF INSTRUCTION BIOMEDICAL AND MOLECULAR SCIENCES .

STUDENTS ENROLLED IN MICROBIOLOGY AND IMMUNOLOGY PROGRAMS IN 2013-2014 OR EARLIER ENROL IN COURSES WITH THE COURSE CODES AND NUMBERS AS SHOWN BELOW.
Admission to courses must be discussed with the supervisory committee, and will be determined by the student's experience and educational need in microbiology and allied sciences.

All MSc students are required to take MICR-910* and MICR-970*; PhD students are required to participate in MICR-910*.

MICR-835* Advanced Procaryotic Structure and Function
In-depth analysis of the genetics, biochemistry, assembly and function of the major structures of the procaryotic cell. Emphasis on the experimental approaches in the current literature. (Offered in alternate years to MICR-836* and concurrently with MICR-435* with additional work required.) Winter term, two hours lecture, one hour tutorial. K. Jarrell.

MICR-836* Microbial Genetics
A detailed description of the processes of heredity in bacteria including a discussion of gene structure and evolution, gene expression and its control, the exchange of genetic material in the microbial world and genetic engineering and its applications. The laboratory component will emphasize modern approaches to genetic engineering. (Offered in alternate years to MICR-835* and concurrently with MICR-436* with additional work required.) Winter term, two hours lecture, one hour tutorial.

MICR-850* Principles of Molecular Virology
Further study of contemporary virology using the textbook as a guide to particles, genomes, replication, expression, infection, and pathogenesis. Emphasizing reading and writing to develop skills in observation and critical thinking, important attributes in understanding the scientific method. (Offered in alternate years to MICR-851* and concurrently with MICR-450* with additional work required.)

Fall term, three lecture hours, three seminar hours. E. Carstens.
EXCLUSION: MICR-450*

MICR-851* Selected Topics in Viral Pathogenesis
The nature of selected animal virus groups and their interactions with the host in disease production with special emphasis on the pathogenesis of tumor and human immunodeficiency viruses will be considered. (Offered in alternate to MICR-850* years and concurrently with MICR-451* with additional work required). Fall term, two lecture hours, two seminars hours, one tutorial hour. L. Raptis.

MICR-852* Virus Infection and Immunity
The molecular basis for virus pathogenesis including the host immune response to virus infection, and viral countermeasures. Emphasis will be on viral infections that result in gastrointestinal, haematological, neurological, and respiratory disease. Tutorials will focus on discussion of current and seminal literature. Offered jointly with MICR-452. Fall term.
PREREQUISITES: MICR-221, MICR-360/860 or equivalents
EXCLUSION: MICR-452.

MICR-860* Immunology
The general principles and mechanisms of immune reaction. Immunochemical and immunobiological aspects of antibody formation and cell-mediated immunity in health and disease will be considered. (Offered concurrently with MICR-360* with additional work required.) Fall term, three lecture hours. M. Szewczuk

MICR-899 Master's Thesis Research

MICR-910* Microbiology and Immunology Seminar Program
A required course for all graduate students entering a MSc or PhD from a BSc. Credit will be based upon attendance and participation in the weekly departmental seminar program and on attendance at all Visiting Speaker/Departmental seminars. In addition, each student will be required to present two seminars based upon his/her research work. Departmental faculty will provide evaluation of each student presentation consisting of a mark and written comments. A final mark will be compiled by the Graduate Program Coordinator (40%, first seminar; 60% second seminar). Fall and winter terms, seminar. N. Martin.

MICR-920* Microbial Pathogenesis
A comprehensive course emphasizing the major microbial and viral groups occurring in human and animal disease. The basic mechanisms involved in host-parasite

interrelationships as well as current effective methodology used in their control will be studied. Winter term. N. Martin.

MICR-930* Advanced Bacteriology
An integrated course dealing with microbial physiology as approached from biochemical, genetic and ecological perspectives. The course will also stress microbial diversity. Fall term. Three lecture hours. K. Jarrell.

MICR-950* Advanced Virology
Advanced general virology with a special emphasis on virus structure, replication patterns under permissive conditions and in persistent infections. Molecular aspects of gene duplication, expression and modulation are emphasized, as well as a consideration of viruses as expression vectors. Fall term. Three lecture hours. L. Raptis.

MICR-960* Advanced Immunology
An advanced course emphasizing the main areas of contemporary immunology. Fall term. M. Szewczuk.

MICR-970* Research Project in Microbiology
A required course for all graduate students entering a Master's program and for those entering a doctoral program without a prior Master's of Science degree. Students will complete essays on central questions related to their research program. The intent of this course is to promote an early appreciation of the literature and/or experimental approaches germane to the student's proposed studies and/or address weaknesses/gaps in the student's prior studies that might impede his/her undertaking the proposed work. Offered all terms. B. Banfield.

MICR-999 Ph.D. Thesis Research

MINING ENGINEERING

APSC- 896* Engineering Leadership and Innovation
This course is designed to develop a range of skills essential for engineering professional practice in both the public and private sectors. The course will focus on; Engineering Leadership and Innovation including its application in project management. The course content will be presented through lectures, case studies, panel discussions and an interactive serious game.

MINE-800* Mining Systems and Processes
This course provides an overview of mining systems and processes and is intended to be presented to graduate students and professionals interested in the mining industry. The course is given in modules by faculty and spans a range of topics from mining to mineral processing with emphasis being placed on mining methods, methods of rock breakage, review of ground stability, ventilation, materials handling, mineral beneficiation, economic and environmental assessments, and corporate social responsibility. Three-term hours, fall term.

MINE-801* Community Aspects of Mineral Resource Development
This course provides students with a thorough understanding of community issues associated with mineral resource development. It provides context and examples to demonstrate how the industry response to these issues has changed over time. The business case for a disciplined approach to community engagement and relationship building is outlined. It introduces the topics of community development, community engagement, and indigenous issues which are further explored in subsequent courses. Fall term. E.A. Johnson.

MINE-803* Community Engagement and Mining
This course extends the exploration of a range of community development and community engagement domains, techniques and skills, relating to social technique, participatory approach to community development planning and programming; the use of partnerships as a vehicle for participatory development; social impact assessment; community engagement planning; program monitoring and evaluation. It expands and reinforces the participant's understanding of how the application of professional approaches and methods can assist communities and companies to build sustainable, organized relationships and structures within the broader context of mining and development practice, locally, nationally, and globally. Winter term. E.A. Johnson

MINE-804* Mining Projects and Indigenous Peoples
This course examines the social, political and economic relationships that exist between Indigenous Peoples and external parties in the development of commercial mining operations. The course will review specific social, political and economic issues arising from the engagement of Indigenous Peoples with the minerals industry, and the skill sets and knowledge base that are critical to negotiating positive relationships between Indigenous Peoples and mining companies. Winter term. E.A. Johnson

MINE-812* Underground Mining
This course provides a comprehensive discourse of all aspects of underground mining. It is designed to provide engineers with full knowledge to develop strategic and tactical mine planning and to incorporate all aspects of underground mining, including method selection, design, planning, scheduling, development and production. Classification methodologies are introduced to permit selection of a mining method based on orebody characteristics. The program includes description and application of underground mining methods, equipment selection and basic requirements.Layout and design of underground mine development and production and related equipment requirements are presented. Support services, including ground control, ventilation, dewatering, backfill, compressed air are introduced. Winter term; E.M. de Souza

MINE-814* Advanced Ventilation and Environmental Mine Engineering
The development of basic airflow models and complex ventilation networks are discussed in depth, and practical design studies using computerized techniques are developed. Topics related to ventilation calculation and design include: mine regulations and engineering design criteria, basic and complex circuit evaluation and design, natural ventilation, fan selection, auxiliary ventilation design, ventilation surveys and ventilation economics. The total environment of mines and air quality control are studied in detail, and include mine gases, mine dust, heat control and radiation hazard and control in mines. Three term-hours, lectures. Fall term. E.M. de Souza

MINE-817* Advanced Explosives Technology
Detonation theory and its applications. Topics include: Detonation theory, equations of state, experimental techniques for measuring explosive properties, initiation and sensitivity, shaped charges, metal working with explosives, commercial explosives, metal loaded explosives, dust explosions, pressure desensitization, numerical methods. Three term-hours, lectures. Not offered 2018-19.

MINE-818* Rock Mechanics
Theories and application of rock mechanics principles in underground and open pit

mine design are discussed. General areas of concentration include assessment of elastic for rock; the determination and influence of in-situ stress on excavation stability; evaluation of ground movement, subsidence and convergence; review of rock slope stability factors and mitigation techniques for stabilization; and assessment of contemporary and innovative measures for ground support provision in underground mines. Three term-hours; Winter term. J.F. Archibald.

MINE-819* Numerical modelling in mining geomechanics
This course introduces numerical modelling methods used in mining geomechanics. The basic theory and use of finite difference, finite element, boundary element continuum and discrete particle discontinuum codes will be reviewed with the objective of providing an understanding of the mathematical basis for each method, and their major differences. The emphasis will be on building and interpreting models. Three term-hours, lectures. Winter term. S. McKinnon.

MINE-820* Topics in Drilling and Blasting
Rock failure in blasting. Topics include fragmentation, influence of joints and rock structure, theory of fracturing and crack propagation, cratering, blasting-induced vibrations and damage, wall control techniques, numerical methods. Three term- hours, fall and/or winter terms; lectures. P. Katsabanis

MINE-821* Hydrometallurgy and electrometallurgy: Theory and practice
This lecture- and seminar-based course covers the advanced topics about hydrometallurgy and electrometallurgy. The course involves the theory of leaching, solid liquid separation, solvent extraction and ion exchange,chemical precipitation and electrometallurgy. In addition, several process options and flowsheets for the recovery of selected base metals (copper, zinc and nickel)and gold will be presented. Each student will perform a literature survey, write a report and present on a topic of interest. Three term-hours, lectures. Not offered 2018-19.

MINE-822* Ore Estimation, Grade Control and Mine Planning
The impact of ore estimation uncertainty on the mine planning process is examined. Deposits, including precious and base metals are discussed. Strategic mine planning will be studied including: the impacts of regulatory, financial and other constraints on mine optimization; methodologies for determining planning inputs; the role of traditional and emerging algorithms for pit limit analysis and mine scheduling; and, techniques for planning under uncertainty. Students will develop a strategic mine plan for a mineral deposit. The focus will be on surface mining activities, however, the principles are applicable to underground mining. Three term-hours, lectures and laboratory. Not offered 2018-19.

MINE-828* Seismicity in Mines
This course provides a broad overview of seismicity in mines, ranging from its causes, source mechanisms, waveform analysis, influence of geological factors including stresses, monitoring systems, analysis of seismic data, and applications of seismic data analysis in mining geomechanics and mine design. Familiarity with principles of rock mechanics and structural geology are assumed for the course.Three term-hours; lectures. Winter term. S. McKinnon.

MINE-832* Flotation Science and Technology
Roles and applications of flotation in the mining industry, tailings management, recycling and environmental clean-up are discussed. The topics include both interfacial aspects such as wettability, electrical double layer theories, dispersioncoagulation/flocculation, reagent interactions, as well as the engineering aspects such as sampling/mass balancing, kinetics and circuit design. Primary examples of technologies related to processing of sulphide ores, non-sulphide ores, salts, coals and tar sands are covered. The course includes laboratory sessions on selected topics. Three term hours plus 3 lab sessions; Fall and/or Winter term. S. Kelebek.

MINE- 834* Advanced Geostatistics for Modelling Uncertainty in the Earth Sciences
This course introduces the theory and practice of advanced geostatistics to characterize the uncertainty in spatially distributed attributes in the Earth Sciences. The course presents tools and modelling workflows, including multiGaussian simulation, indicator simulation, and multiplepoint statistics. Multivariate techniques will also be reviewed, and examples will be provided in a mining context. The audience is engineers and geoscientists from all relevant engineering and applied science disciplines who have an interest in models of Earth systems. Fall or Winter term. J. Ortiz.

MINE-836* Mineral Processing and the Environment
The objective of this course is to provide an introduction to mineral processing unit operations with regards to final product production. Process selection criteria will be highlighted including economics, efficiency, and geographic location. Environ mental issues associated with producing metals from a variety of ore types will be examined including tailings treatment/impoundment methods and pyrometallurgical and hydrometallurgical refining techniques. Three term-hours, fall and/or winter term, lectures. S. Kelebek

MINE-838* Project Decision-making in Extractive Metallurgy
The goal of this course is to provide an opportunity for students to use information from their undergraduate courses to make decisions on projects of the type that they may face in their future careers. The course will analyze actual project case histories in

mining and process metallurgy and evaluate them from technical, economic, and risk perspectives. The objective of each case will be to confront the student and/or group with a decision point similar to that faced in the actual situation. The students will work individually and/or in small groups in an interactive tutorial setting to develop each case for class presentation. There will also be opportunities for interaction with invited experts from industry. The course will show students how to use the key evaluation tools for objective project and process decision-making in mining and process metallurgy. Three term-hours. Winter term, lectures. A. Ghahreman

MINE-839* Advanced Pyrometallurgy
In this course, pyrometallurgical technologies for metals extraction are discussed and evaluated. This includes basic thermodynamics, solution thermodynamics and alternative standard states. Models of metallurgical solutions are examined. Stability diagrams are utilized to understand processes and predominance area diagrams are used to explain roasting. Current research areas in pyrometallurgy are discussed with emphasis on energy and the environment.Three term-hours, lectures. Fall term. C.A. Pickles

MINE-851* Maintenance Engineering
This course establishes the analytical foundations for the maintenance of heavy industrial plant and mobile equipment in a production environment. Topics covered are: maintenance planning and life-cycle behaviour; condition monitoring, including vibration analysis; organization and management of maintenance; reliability centered maintenance. Three term-hours, lectures. Fall term. L.K. Daneshmend

MINE-852* Mine Mechanization and Automation
Objectives, constraints, and methodologies for mechanization and automation. Modelling and simulation of mining processes and equipment. Equipment monitoring. Production monitoring. Navigation and automatic guidance of mobile equipment, including inertial navigation and GPS. Dispatching and scheduling systems. Mine-wide communications systems. SCADA (Supervisory control and data acquisition) systems. Teleoperation and Telerobotics technologies. Machine design in the context of mechanization and automation; reliability and maintainability. Technology transfer issues. Case studies of both surface and underground mines. Winter term. L.K. Daneshmend.

MINE-853* Mining Robotics
Mining equipment suppliers now offer robotic tramming systems for surface and underground vehicles, real-time equipment and personnel tracking systems, as well as telerobotic options for loading, haulage, rock breaking, and other heavy equipment.

This course offers an introduction to control and estimation engineering as applied to heavy equipment in mining. The class material attempts to provide students with a sufficient foundation to pursue advanced research in this area. Topics include: a review of commonly used sensor technologies; an introduction to vehicle kinematics/dynamics; trajectory and path tracking control; an introduction to vehicle navigation; robotic mapping/surveying; mining machine case studies and examples. Not offered 2018-19.

MINE-855* Autonomous Ground Vehicles Engineering
The objective of this course is to introduce graduate-level engineering students to the fundamentals of autonomous ground vehicles engineering. The course focuses on those tasks usually carried out by autonomy engineers, including sensor selection, applied control (e.g., trajectory and path following) and navigation techniques for robotic wheeled vehicles that operate in real environments (e.g., mining, construction, warehouses, roadways, etc.). The audience is graduate students from all relevant engineering and applied science disciplines who have an interest in mobile robotics, applied control and estimation, and robotic vehicle applications**.** Winter term. J. Marshall.
PREREQUISITE: Students must have taken at least one undergraduate level course in control systems engineering (e.g., MECH-350, ELEC-443, or equivalent).

MINE-860* Selected Topics in Mining Engineering
This course is intended for students at both the Masters and Doctoral levels who already have a good background in fundamental topics related to their research or course-based programs of study, and who are interested in broadening their exposure to other subject areas of mining engineering that are not offered through existing graduate courses. Topics will focus on either mining, mineral processing or mine-mechanical-related areas of mining engineering, and will be presented through lectures, seminar presentations, open classroom discussion and self-directed independent study. The specific course content to be taught to students will be posted in writing at the beginning of each term in which this course will be given, and the deliverable will be presented publicly at the end of the term, and will take the form of a lecture, bibliographic review, proof of concept or other deemed appropriate by the supervisor. Marking for the course will be assessed on the basis of student assignments, written reports and classroom presentations. Fall and/or Winter term.

MINE-862* Issues in Health, Safety and Environment
The following topics are covered: Introduction to Health and Safety and Environment, Risk Perception and Assessment, Occupational Hygiene, Indoor Air Quality, Principles of Safety Theory and Management, Risk Homeostasis, Principles of Occupational Toxicology, OEL , Toxic Effects of Airborne Contaminants, Dermal Exposure,

Evaluation of Airborne Contaminant Levels, Noise, Vibration and Other Physical Agents, Radiation - Ionizing an Nonionizing, Ergonomics, Control Measures for Airborne Contaminants and Heat Stress, Diverse perspectives, Health, Safety and Environment Issues and Engineering Responsibilities, Government, Industry and Labour Unions. Three term-hours, Winter term, lectures.
L. Daneshmend.

MINE- 865* Directed Research
This course is intended for students at both the Masters and Doctoral levels who already have a good background in fundamental topics related to their research or course-based programs of study. The course is created by a professor in agreement with a student to explore an area of common interest that may have the potential of adding to the student's research thesis topic. The course deliverable may consist of a final report, a lecture, a short research project, a paper, a prototype, or a computer code.

MINE-897 Graduate Seminar
Each student is required to make a presentation concerning his project or research at least once per calendar year. For those students who may only be enrolled in part-time studies, or who may be completing their degree requirements off campus, this requirement may be met through submission of electronic media presentation, which can be viewed, by staff and students, during a regularly scheduled seminar session. This is a non-credit course which each student must pass successfully. J.Ortiz.

MINE-898* Master's Project
(3.0 credit units)

MINE-899 Master's Thesis Research

MINE-999 Ph.D. Thesis Research

Courses for the Graduate Diploma in Social Performance Management in the Extractive Industries

MINE-800* Mining Systems and Processes
This course provides an overview of mining systems and processes and is intended to be presented to professionals new to working in the mining industry. The course is given in modules by faculty and spans a range of topics from mining to mineral processing with emphasis being placed on mining methods, methods of rock breakage, review of ground stability, ventilation, materials handling, mineral beneficiation,

economic and environmental assessments, and corporate social responsibility. Three-term hours, fall term.

MINE-801* Community Aspects of Mineral Resource Development
This course provides students with a thorough understanding of community issues associated with mineral resource development. It provides context and examples to demonstrate how the industry response to these issues has changed over time. The business case for a disciplined approach to community engagement and relationship building is outlined. It introduces the topics of community development, community engagement, and indigenous issues which are further explored in subsequent courses. Fall term. E.A. Johnson.

MINE-803* Community Engagement and Mining
This course extends the exploration of a range of community development and community engagement domains, techniques and skills, relating to social technique, participatory approached to community development planning and programming; the use of partnerships as a vehicle for participatory development; social impact assessment; community engagement planning; program monitoring and evaluation. It expands and reinforces the participant's understanding of how the application of professional approaches and methods can assist communities and companies to build sustainable, organized relationships and structures within the broader context of mining and development practice, locally, nationally, and globally. Winter term. E.A. Johnson.

MINE-804* Mining Projects and Indigenous Peoples
This course examines the social, political and economic relationships that exist between Indigenous Peoples and external parties in the development of commercial mining operations. The course will review specific social, political and economic issues arising from the engagement of Indigenous Peoples with the minerals industry, and the skill sets and knowledge base that are critical to negotiating positive relationships between Indigenous Peoples and mining companies. Winter term. E.A. Johnson.

NEUROSCIENCE

All courses are half courses with the exception of NSCI-825, NSCI-899, NSCI-999.

NSCI-800* Current Concepts in Neuroscience
An advanced course that will focus on current research topics in selected areas of Neuroscience. Topics will include research in all fields of specialization within the Neuroscience graduate program (Cellular/Molecular Neuroscience, Systems Neuroscience, Cognitive/Behavioural Neuroscience, Neurological & Psychiatric Disorders) to introduce students to the breadth of research in Neuroscience. This course is required for all M.Sc. students in the Neuroscience graduate program.
Three hour seminar/week: fall. TBA PREREQUISITE: An introductory course in neuroscience (LISC 322 or equivalent), or permission of the course supervisor. In the absence of a background in either biological or natural sciences, students will be required to enroll in NSCI-821* Fundamentals of Neuroscience as a prerequisite. Enrolment is limited with priority given to Neuroscience graduate students.

NSCI-801* Developmental Disabilities - From Neurobiology to Neurobehaviour
This course is designed for graduate students in neuroscience and for residents, fellows, and clinical interns in the mental health professions. Topics range from epidemiology and etiology to the molecular genetics and biology of specific disorders, to legal and ethical issues regarding care and treatment and promoting equity for this vulnerable population.
Three hour seminar/week: winter. J. Holden. (Offered in years ending in an uneven number) PREREQUISITE: Introductory courses in neuroscience/neurobiology and genetics. Enrolment is limited with priority given to Neuroscience graduate students.

NSCI-802* Psychiatric Disorders - From Neurobiology to Neurobehaviour
This course is designed to provide students with an in depth understanding of psychiatric conditions including bipolar disorder, schizophrenia, major depression, obsessive compulsive disorders, anxiety disorder, personality disorders, dementia, and childhood psychopathology. Discussions range from the genetics underlying these conditions to the neurophysiological, neurobehavioural and neurocognitive correlates. Topics include epidemiology, etiology, assessment methods, treatments, neurobiology, genetics, neuropathology and recent research on each condition.
Three hour seminars/week:winter. TBA (Offered in years ending in an even number). PREREQUISITE: Introductory courses in neuroscience/neurobiology and genetics. Enrolment is limited with priority given to Neuroscience graduate students.

NSCI-803* Magnetic Resonance Imaging
This course is designed for graduate students who want to learn the theory and practice of magnetic resonance imaging (MRI) for anatomical imaging, imaging of dynamic physiological processes, and MRI to detect neuronal function (functional MRI, fMRI). The course will allow the student to gain an understanding of the principles that underlie the applications of MRI and fMRI as a research tool.Three hour lecture/week; fall. P. Stroman PREREQUISITES: Introductory courses in Chemistry, Mathematics and Physics. Permission of the Instructor.

NSCI-813* Advances in Neuropharmacology
Recent advances in understanding neurotransmission and pharmacology in the central nervous system will be discussed. The current literature describing progress in understanding molecular, cellular and behavioural aspects of brain function, and the impact of drugs and disease, will be examined. Winter; seminars. Given in years ending with an uneven number. PREREQUISITE: Permission of Graduate Program
EXCLUSION: PHAR-810*, BMED-813*

NSCI-815* Special Directed Topics
Designed for students with special interests that are not covered by existing courses offered in the Centre for Neuroscience Studies. Normally, this will take the form of a closely supervised reading course in the area of a graduate instructor's expertise, but may also include supervised laboratory work and/or specialized clinical experience. Course Coordinator: Dr. Stephen Scott.

NSCI-822* Cellular and Molecular Neuroscience
An in-depth study of the biophysical properties of neurons and diseases that affect the function of neurons and glia. Topics will include cable properties of dendrites, voltage- and ligand-dependent channels, and molecular mechanisms responsible for neuronal death and regeneration. The course will be based on lectures and student seminars of selected readings. Given concurrently with LISC-422*, with additional assignments for graduate students. (Same as ANAT-822)
One hour lecture/week, 2 hour seminar/week: winter. K. Rose. (Offered in years ending in an even number)
PREREQUISITE: LISC-322* with a minimum of 70%, or an equivalent course, or permission of the instructor. Enrollment is limited.
EXCLUSIONS: LISC 422*

NSCI-825 Medical Neuroscience

A multidisciplinary graduate level course exposing students to the clinical aspects of

neuroscience (same as ANAT-825, PHAR-825 and PHGY-825). Didactic lectures cover detailed organization of the nervous system with clinical implications. Laboratories review basic neuroanatomy and pathology. Clinical demonstrations expose students to several neurological disorders. Lectures, laboratories, and clinical cases. Up to 20 hr/week; 9 weeks total: Fall. M. Kawaja

NSCI-826* Cognitive Neuroscience
A course for graduate students to explore advanced concepts of cognitive processes in the central nervous system. This is a multi-disciplinary lecture/seminar course with active student participation expected. The course will consist of weekly sessions focusing on specific concepts such as perception, motor processing, reward systems, working memory, executive functions and decision making.Offered jointly with NSCI-426. PREREQUISITE: Permission of Instructor
EXCLUSION: ANAT-826*, PHGY-826*, NSCI-426

NSCI-829* Disorders of the Nervous System
A multi-disciplinary course exploring advanced concepts of clinical neuroscience . Topics can include stroke, traumatic brain and cord injuries, neurodegenerative disorders, epilepsy, schizophrenia, depression, deep brain stimulation, pain and placebo effects, normal and abnormal aging, stem cells. Students will learn to critically evaluate scientific literature and present these concepts to classmates during student-led seminars. Enrolment is limited. PREREQUISITE: NSCI 322* or NSCI 323* or ANAT 312* or PSYC 271* or permission of instructors
EXCLUSION: NSCI 429*

NSCI-830* Biological, Clinical, and Social Aspects of Dementia
Alzheimer's disease and related dementias will have an increasing importance in the field of neuroscience given the aging of the Canadian population. The purpose of this course is to provide an overview of the major topic areas in dementia research and provide a foundation for understanding the complexity of dementia research across disciplines and research methodologies.

NSCI-844* Controversies in Neuroscience
As insight regarding the human brain expands, so do related issues such as what constitutes personhood, what drives the criminal mind, intelligence-enhancing drugs and end-of-life issues. Lead by experts who deal daily with such concerns, we will focus weekly on a particular topic in neuroscience which impacts on society. PREREQUISITE: At minimum, an introductory course in the Neurosciences or permission of the Instructor.

NSCI-850* Computational Approaches to Neuroscience
This course will provide an overview and hands on experience of the most important computational approaches in Neuroscience. The main topics covered include single cell and neural network modelling, Bayesian approaches, State Space modelling and Optimal Control Theory. More specific modelling approaches will also be discussed as well as some widely used computational data analysis methods.
PREREQUISITE permission of course director

NSCI-855* Modelling in Neuroscience
This course is based on the annual Summer School in Computational Sensory-Motor-Neuroscience (CoSMo), which is a 2-week (12 days) intensive course. Through lectures, tutorials and a problem-based project, students will gain advanced knowledge and experience in the application of computational methodologies to modelling in neuroscience. Summer term.

NSCI-868 Clinical neuroscience methods
The objective of this course is to familiarize graduate students with the principles and practice of cutting edge technologies used in clinical neuroscience methods involved in biomedical research. (1.0 credit unit)
EXCLUSION: BMED-868

NSCI-899 Master's Thesis Research

NSCI-999 Ph.D. Thesis Research

The following is a list of courses that also may be appropriate for students in the Neuroscience graduate program. For full descriptions refer to the appropriate departmental course listing.

ANAT 812* Advanced Neuroanatomy

ANAT 818* Chemical Neuroanatomy

BIOL 815* Neuronal Basis of Behaviour

PHAR 810* Advances in Neuropharmacology

PHGY/ANAT 826* Current Concepts in Sensorimotor Integration

PSYC 921* Visual and Auditory Processes

PSYC 930* **Somatosensory, Intersensory and Motor Processes**

PSYC 931* **Neuroplasticity and Behaviour**

PSYC 932* **Neuroethology**

PSYC 934* **Animal Behaviour (Ethology)**

PSYC 935* **Neurotransmitters and Behaviour**

PSYC 965* **Memory, Decision and Choice**

PSYC 966* **Comprehension and Performance**

RHBS 801* **Motor Performance in Rehabilitation**

NURSING

The * next to a course number (eg. NURS - 811*) denotes a half-course (3.0 credit units). Students whose research is closely linked to other disciplines, such as basic, behavioural, or social sciences, may be advised or may wish to complement core nursing courses with courses in the relevant discipline.

NURS-800* Intermediate Statistics and Analysis
This course introduces students to hands-on data analysis and computational methods that are commonly used in nursing inquiry and research. The course focuses on both descriptive and inferential statistical techniques, with emphasis on selecting an appropriate statistical approach to hypothesis testing, data analysis techniques, interpretation and appraisal of statistical analyses results. Winter term.

NURS-801* Topics in Nursing Research
A course for all graduate students focussing on issues in the conduct of research. The course includes presentations by visiting scientists, faculty, and current students as well as lectures and discussions. Assessment will be based on satisfactory completion of course requirements (Pass/Fail). Not offered 2018-19.

NURS-802* Qualitative Methodology & Methods
An overview of qualitative methodology and methods frequently used in nursing and health care research is provided. Topics include, but are not limited to, action research, ethnography, grounded theory, hermeneutics phenomenology, and narrative. Opportunities may exist for developing research questions, techniques for data collection, data analysis and dissemination. Fall term.

NURS-803* Intermediate Quantitative Research Design
Course builds upon concepts gained in undergraduate research design courses. Focus is on the critical evaluation of research evidence through the exploration and application of quantitative research methods. Emphasis on the appropriate selection of research design elements for nursing inquiry and development of a research proposal. Winter term.

NURS-805* Nursing, Health Services and Public Policy in Canada
This course addresses concepts in the policy process, policy development, policy analysis and policy implementation as they relate to nursing in Canadian health care. Discussion will focus on contemporary issues in nursing and health care with an examination of the political process, research-policy linkages, the role of the organized

professions, the bureaucracy, politicians, the media and health care organizations. Offered jointly with NURS-905*. Not offered 2018-19.

NURS-811* Theoretical Bases of Nursing Research
This course focuses on the development of knowledge within the discipline of nursing with emphasis on historical and philosophical assumptions and paradigms influencing nursing science. Students will discuss and debate the assumptions and perspectives in nursing practice and research toward establishing a conceptual base for other graduate courses. Fall term.

NURS-822* Nursing Research in Women's and Children's Health Issues
Advanced seminar on conduct and application of nursing research with women and children. Students critique theoretical and empirical validity of nursing assessment and intervention methods for health promotion, recovery and rehabilitation applications. Not offered 2018-19.

NURS-832* Nursing Research for Complex Chronic Health Conditions
The focus of this course is on individuals and families experiencing complex chronic health conditions. Students will examine the characteristics and effects of chronic disease prevention and management strategies on health outcomes in patients and families, with a specific focus on the contribution of Nursing within these strategies. Winter term.

NURS-833* Nursing Research for Persons at Risk for Mental Health Conditions
Topics related to persons at risk or experiencing chronic mental health conditions. Focus is on examining theoretical and research bases of selected mental health concepts relating to nursing assessments and outcome measurement. Specific topics will reflect students' interests. Not offered 2018-19.

NURS-850* Pathophysiology for Nurse Practitioners
To examine the concepts of pathophysiology which guide the practice of advanced nursing practice. To study pathophysiological changes in individuals in a primary health care setting by taking into account their age, acuity, chronicity, and evolution of the conditions. Term length delivered over two terms. Fall and Winter terms.

NURS-853* PHCNP Roles and Responsibilities
Compare and contrast advanced practice nursing and related frameworks to develop, integrate, sustain, and evaluate the role of the nurse practitioner within primary health care. Critically analyze and develop strategies to implement advanced practice nursing

competencies with a focus on the community. Term length delivered over two terms. Fall and Winter terms.

NURS-854 Integrative Practicum
Synthesize competencies essential to advanced nursing practice to provide primary health care for clients across the lifespan. Demonstrate autonomy and decision-making and critically analyze organizational and system issues that influence scope of practice, professional accountability and outcomes. Seminar - 6 hours every 2 weeks, Clinical - 35 hours per week for 13 weeks(12 credits). Summer term.
PRE-REQUISITES for students enrolled in the PHCNP Diploma program: NURS-850*, NURS-853*,NURS-856, NURS-857, NURS-858, NURS-859
PRE-REQUISITES for students enrolled in the MN(PHCNP) program: NURS-800*, NURS-802*, NURS-803*, NURS-811* NURS-850*, NURS-853*, NURS-856, NURS-857, NURS-858,NURS-859, NURS-898

NURS-856 Advanced Health Assessment and Diagnosis I
Analyze and critique concepts and frameworks essential to advanced health assessment and diagnosis using clinical reasoning skills. Apply clinical, theoretical and research knowledge in comprehensive and focused health assessments for the individual client's diagnostic plan of care. Seminar - 3 hours per week, Clinical – 6 hours per week. (4.5 credits). Fall term.
PRE- or COREQUISITE: NURS-850*

NURS-857 Advanced Health Assessment and Diagnosis II
Integrate knowledge and apply conceptual frameworks integral to advanced health assessment and diagnosis in advanced nursing practice. Demonstrate initiative, responsibility, and accountability in complex decision making for individuals, groups, and/or families within the nurse practitioner scope of practice based on current research findings. Seminar - 3 hours per week, Clinical – 6 hours per week. (4.5 credits). Winter term.
PREREQUISITE: NURS-856; PRE- or COREQUISITE: NURS-850*

NURS-858 Therapeutics in Primary Health Care I
Critically appraise and interpret concepts and frameworks integral to pharmacotherapy, advanced counselling, and complementary therapies for common conditions across the lifespan. Develop ,initiate, manage, and evaluate therapeutic plans of care that incorporate client values and acceptability, goals of therapy, analysis of different approaches, pharmacotherapeutic principles. Seminar - 3 hours per week, Clinical - 6 hours per week.(4.5 credits). Fall term.
PRE- or COREQUISITE: NURS-850*, NURS-856

NURS-859 Therapeutics in Primary Health Care II
Integrate conceptual frameworks and evidence underlying the study of pharmacotherapy, advanced counselling, and complementary therapies for complex client situations. Demonstrate substantive initiative, responsibility, and accountability in complex decision making. Seminar - 3 hours per week, Clinical - 6 hours per week. (4.5 credits) Winter term.
PREREQUISITE: NURS-858;
PRE- OR COREQUISITE: NURS-850*, NURS-857

NURS-862* Health Care Management Systems
This purpose of this course is to critically examine some of the theoretical and methodological issues affecting research on health management innovations. Emphasis will be placed on understanding the implications of research for health care outcomes. Winter term.

NURS-892* Independent Study
A study under the guidance of a graduate faculty member in a nursing subject not in existing courses. Normally it takes the form of a closely supervised reading and/or practicum in an area of the instructor's expertise with appropriate means of evaluation. Must not directly overlap thesis work. PREREQUISITE: Permission of the instructor and course outline approval of Graduate Program Committee.

NURS-898 Project in Evidence Based Practice
The focus of this course is on the scholarship of integration. Students will develop the knowledge and ability: 1) to identify evidence on a specific question related to the practice of primary health care nurse practitioners; 2) to critically appraise and synthesize evidence; and, 3) to integrate evidence to inform practice. Includes seminars and independent study. (6.0 credits). Summer term.
PREREQUISITES: NURS-800*, NURS-802*, NURS-803*, NURS-811*

NURS-899 Master's Thesis Research
A research endeavour conducted under the guidance of a thesis supervisor. The thesis will be completed and the student examined in accordance with the regulations of the School of Graduate Studies .

NURS-900* Advanced Statistics and Analytic Techniques
This course builds on intermediate statistical skills and understanding. Emphasis is placed on links between research design and statistical analysis. Hands on computational analysis and advanced statistical methods commonly used in nursing

inquiry will be explored. Topics include application and interpretation of common bivariate and multivariable analytic and modeling techniques. Winter term.

NURS-901* Philosophy of Nursing Science
The course examines the major philosophical traditions that have influenced the generation of nursing knowledge through empirical, interpretive and critical paradigms. It includes a critical analysis of world views, truth, theoretical perspectives, theories, and constructs within the discipline, with an emphasis on relationships between philosophy, theory, research and practice in the generation of nursing knowledge. Fall term.

NURS-902* Qualitative Research Methods in Health Sciences
This course prepares students to evaluate and undertake health related research using qualitative approaches. Topics addressed include the historical and philosophical foundations of qualitative research, research design, data collection, analysis, interpretation and ethical concerns. Fall term.

NURS-903* Advanced Quantitative Measurement, Methods and Design
This course prepares nurse scientists to advance nursing knowledge through independent research using quantitative methods. It focuses on conceptualizing research, measurement, design, sampling and reliability of measures. Emphasis is placed on the appropriateness of design for the level of theoretical knowledge available and the nature of the research problem to be investigated. Winter term.

NURS-905* Nursing, Health Services and Public Policy in Canada
This course addresses concepts in the policy process, policy development, policy analysis and policy implementation as they relate to nursing in Canadian health care. Discussion will focus on contemporary issues in nursing and health care with an examination of the political process, research-policy linkages, the role of the organized professions, the bureaucracy, politicians, the media and health care organizations. Offered jointly with NURS-805*. Summer term.

NURS-906* Thesis Seminar Course
A required doctoral course for all PhD students. Topics will be selected to support students in completion of the doctoral degree.Discussions will include students' research studies; elements of data collection and analysis; contemporary nursing issues in health services and policy; and the role of nursing leaders in Canada. Students are required to be registered in the course in the second year of the program. The course will include seminars, presentations from visiting scholars with sessions held every other week throughout the year. Fall and Winter terms.

NURS-907* Independent Study
A study under the guidance of a graduate faculty member on a nursing topic not offered in existing courses. Normally it takes the form of a closely supervised reading course in the area of the instructor's expertise with appropriate means of evaluation. Must not directly overlap thesis work.

NURS-999 Ph.D. Thesis Research

Courses for the Graduate Diploma in Pain Care (all courses except PAIN-874* are online courses):

PAIN-870* Pathophysiology of Pain
This course explores pain conditions with their underlying mechanisms and will review the basic neuroscience of pain. Anatomical, physiological, psychological and biochemical mechanisms involved in nociception are presented. Theoretical models underpinning our understanding of these mechanisms in the biopsychosocial context will be explored. Not offered 2018-19.

PAIN-871* Assessment and Treatment of Pain I
This course builds upon the advanced knowledge provided in PAIN 870 and on the basic knowledge provided in most undergraduate health professional programs. It provides a comprehensive overview of the definitions, characteristics and epidemiology of various pain conditions, followed by an in-depth examination of the assessment and treatment of acute pain. It will assist learners in understanding the prevalence of pain and in developing comprehensive approaches to the assessment of individuals with acute pain to guide diagnosis, care and treatment. Not offered 2018-19.
PRE- or CO REQUISITE: PAIN-870*

PAIN-872* Assessment and Treatment of Pain II
This course expands on the advanced knowledge provided in PAIN- 870* and PAIN-871* as well as basic pain education provided in undergraduate level health professional programs. Comprehensive descriptions of chronic pain conditions, their incidence, prevalence, and risk factors will be discussed. Learners will develop comprehensive approaches to the assessment, diagnosis, care and treatment of individuals with chronic pain. Not offered 2018-19.
PREREQUISITE: PAIN-870*, PAIN-871*

PAIN-873* Evaluating Pain Related Programs and Service
This course introduces learners to evaluation principles and practices that can be applied to the development and implementation of solutions for problems or issues

arising in pain related intervention and programs. Learners will acquire the skills necessary to assess the nature and scope of a problem, as well as to design, implement, and evaluate the effects of a solution or program intended to address a problem related to pain care. Topics will include theoretical aspects of program evaluation, program development models, and the various components of program evaluation and implementation procedures. Not offered 2018-19.

PAIN-874* Integrated Approach to Pain Care
This course focuses on applying theoretical concepts of pain to clinical scenarios in a clinical simulation environment to further learners' understanding of the application of best practices in pain care. Practice will be conducted using an interprofessional approach to pain care. Not offered 2018-19.
PREREQUISITES: PAIN-870, PAIN-871, PAIN-872, PAIN-873

OCCUPATIONAL THERAPY

OT-801 Conceptual Models in Occupational Therapy
This course introduces students to the central construct of occupation and to both the consequences and determinants of occupation. We will explore the most prominent theoretical models for understanding the relationship between occupation and health, and the factors that affect occupation. The course also covers the historical development of occupational therapy theory, and key theorists over the past 100 years. (4.0 credit units)

OT-802 Models of Practice in Occupational Therapy
This course introduces students to occupational therapy interventions, processes of change, and tools for being an occupational therapist.In addition, students will apply occupational therapy theory to practice situations. (2.0 credit units)

OT-821 Occupational Therapy Theory, Process and Professional Practice
This course introduces the central construct of occupation, the relationship of occupation to health and well-being, models of occupation, processes of occupational change, and the historical development of occupational therapy theory. The course will examine occupational therapy practice in the context of the Canadian health care system, enablement and client-centered practice, professional identity and governance, professional ethics and the evolving public/private sector. The stages of the occupational therapy process and legitimate occupational therapy skills will also be introduced. (6.0 credit units)

OT-823 Disability Theory
This course introduces the concepts of disability, citizenship and societal participation. Conceptual frameworks of disability and issues and implications of disability will be discussed along with Canadian health and social policies relating to people with disabilities. (1.5 credit units)

OT-825 The Lived Experience of Disability
In this fieldwork course, pairs of first year students meet with a volunteer from the Kingston community who has a disability. The goal of this unique learning relationship is to improve students' understanding of disability and facilitate their embracing the concept of client-centred practice whereby a client's life experiences are acknowledged and they become partners in the occupational therapy process. (1.5 credit units)

OT-826 Enabling Occupation in Children and Youth
This course provides students with the foundational knowledge to identify factors

influencing performance and participation for children and adolescents. Evaluation and intervention approaches at the level of impairment, activity limitations, and participation restrictions will be explored by considering the context of service provision systems and the diverse roles of Occupational Therapy practitioners in collaboration with families and inter-professional service providers. (Lecture + lab) (4 credit units) Prerequisites: OT-881, OT-882*, OT-883, & OT-884 (4.0 credit units)

OT-827* Enabling Occupation in Older Adults
This course provides students with the foundational knowledge necessary to identify factors influencing performance and participation of older adults. Evaluation and intervention approaches at the level of impairment, activity limitation, and participation will be explored by considering the diverse roles of occupational therapy practitioners in collaboration with families and inter-professional service providers across a range of service provision contexts. (3 credit units)

OT-841* Socio-cultural Determinants of Occupation
This course will examine the social and cultural nature of occupation. Students will analyze the relationship between occupation and such socio-cultural components as values and belief, time use, roles, habits, expectations and norms and explore how occupational therapy interventions based on this understanding could lead to changes in occupation. This course will also examine contemporary views of spirituality in occupation. The importance of occupations to society will also be addressed. (3.0 credit units)

OT-842* Environmental Determinants of Occupation
This course will focus on the creation of healthy environments that enable client-centred occupations. Students will examine factors within the physical, social, cultural and institutional environments that affect occupation and how environmental modifications can lead to changes in occupation. They will gain experience with the knowledge and skills critical to effecting environmental change. Prerequisites: OT-823*, OT-881 and OT-882* or permission of the course coordinator. (3.0 credit units)

OT-843 Physical Determinants of Occupation
This course will introduce students to the study of movement of the human body as it relates to occupation. It will have an emphasis on biomechanics and the components of the motor system as determinants of motor performance in occupation. Evaluation methods and modalities used in physical rehabilitation will be studied. The course will also focus on the application of physical rehabilitation methods used in occupational therapy practice by understanding musculo-skeletal conditions and occupational

therapy interventions at the level of impairment and activity limitations. (8.0 credit units).

OT-844 Cognitive-Neuro Part I
This course emphasizes the neuro-physiological organization of motor behaviour, sensory-motor integration, and the dynamic nature of the central nervous system. This course will provide a foundation for evaluating occupational performance from perception to action. It will focus on evaluation and intervention approaches for cognitive-perceptual and motor control problems at three levels: impairment, strategy and function. Attention will be given to secondary motor performance problems. Prerequisites: OT-843 or permission of the course coordinator. (6.0 credit units)

OT-845 Psycho-emotional Determinants of Occupation
This course will focus on the psycho-emotional determinants of occupation as a framework for understanding how humans are inherently motivated for occupations. The intrinsic factors and learned responses associated with occupation will be examined and students will apply and evaluate applications of psycho-emotional theory in contemporary occupational therapy practice.(6.0 credit units)

OT-846 Occupational Therapy Fieldwork I
This fieldwork course, completed continuously and offered in a practice setting, will allow the student to focus on generic assessment skills, developing communication skills and application of OT knowledge to the practice setting. Prerequisites: OT- 825 and OT -851 or permission of the course coordinator. (8.0 credit units)

OT-847 Occupational Therapy Fieldwork II
This fieldwork course, completed continuously and offered in a practice setting, will allow students increased independence in working with clients including assessment, intervention and application of OT knowledge. Prerequisites: OT- 846 or permission of the course coordinator. (8.0 credit units)

OT-848* Cognitive-Neuro Part II
Using knowledge of human development and systems theory, this course builds on Cognitive-Neurological Determinants - Part I by providing students with the foundational knowledge to understand human development and to identify factors influencing performance and participation for children and adolescents who experience atypical development. Evaluation and intervention approaches at the level of impairment, activity limitations, and participation restrictions will be explored by considering the context of service provision and the diverse roles of Occupational Therapy practitioners in collaboration with families and other service providers.

Prerequisites: OT-844 or permission of the course coordinator. (3.0 credit units)

OT-851* Client-Centred Communication
This course focuses on the development of communication skills within the context of client-centred occupational therapy practice. The critical elements of the therapeutic relationship will be developed through interviewing and assessment strategies. This course will make extensive use of supervised video taping, and interaction with community volunteers through the Clinical Education Centre. In addition, students will gain experience in professional communication skills. (3.0 credit units).

OT-852* Group Theory and Process
This course will examine group theory, process and application to occupational therapy practice. It will focus on groups both as a means to enabling occupational therapy change and as a means for working effectively in a complex health care system. Laboratory sessions will facilitate the development of effective techniques in group leadership and participation. Prerequisites: OT-851 or permission of the course coordinator. (3.0 credit units)

OT-853* Coaching and Counseling for Occupational Change
This half course consists of both theoretical background preparation and practical experiential learning opportunities to introduce occupational therapy students to selected talk- based interventions available for enabling occupational fulfillment and change (coaching, counseling and psychotherapy). Prerequisites: OT-851 or permission of the course coordinator (3.0 credit units)

OT-854* Systems Level Communication
The first part of this course will be devoted to the theory and practice of knowledge transfer and diffusion. Laboratory sessions will focus on strategies to: influence and change public attitudes to disability, communicate about professional practice, and transfer knowledge about evidence based practice. The second part will be devoted to the theory and practice of advocacy and negotiation. Laboratory sessions will address strategies to pursue systems level changes that will ultimately enhance occupation. (3.0 credit units)

OT-861* Community Development in Occupational Therapy
This course critically examines the theoretical foundations and processes of working with communities through community development in order to enable occupation at the community level. Theories of community development, the process of engaging with communities, and skills required for community development will be explored as

they pertain to occupational therapy. This course lays the theoretical foundation for the community development fieldwork placement, OT-862.
Prerequisites: OT-842*, OT-851, and OT-852* or permission of the course coordinator. Co-requisite: OT-862 or permission of the course coordinator. (3.0 credit units)

OT-862 Applied Community Development
This fieldwork course, completed continuously, will provide the opportunity for students to explore the process of working with communities to enable occupation and to create inclusive communities and environments. Prerequisites: OT-847 or permission of the course coordinator. (6.0 credit units)

OT-871* Advanced Clinical Reasoning
This course provides opportunities for students to develop advanced clinical reasoning skills applicable to all areas of occupational therapy practice. Based on the occupational therapy process, students will develop skills of critical thinking and inquiry.
Prerequisites: all first-year courses and all second-year, fall-term courses or permission of the course coordinator. (3.0 credit units)

OT-875* Advanced Professional Practice
This course is designed to provide students with opportunities to acquire an advanced understanding of the roles, rights and responsibilities incumbent with becoming an Occupational Therapist. Particular attention will be given to the legal and ethical parameters of practice, professional contributions and responsibilities within complex and changing environments and career development as advanced healthcare professionals. Course content is designed to be responsive to the shifting practice environment and offer students an opportunity to synthesize learning from other courses within the curriculum. Prerequisites: all first-year courses or permission of the course coordinator.(3.0 credit units)

OT-877 Occupational Therapy Fieldwork III
This fieldwork course, completed continuously and offered in a practice setting, will allow students to consolidate OT knowledge and skills. The focus of this final fieldwork placement is for the student to maximize independence in the areas of assessment, intervention, programming and evaluation. Prerequisites: OT 847 or permission of the course coordinator. (8.0 credit units)

OT-881 Physical Determinants of Occupation I
This course introduces students to human occupation from the perspective of its anatomical, physiological and biomechanical dimensions. The course will use an

integrated case study format to develop understanding of movement of the human body as it relates to occupation. The course will focus on the assessment methods used in physical rehabilitation and introduce musculoskeletal conditions as they relate to occupation. Theoretical frameworks and evidence-informed practice approaches and interventions will be addressed in class and weekly lab sessions. PREREQUISITE: none (4.0 credit units)

OT-882* Psychosocial Determinants of Occupation I
This course introduces students to human occupation from the perspective of its psychological, emotional and social dimensions. This course will use a case study format to develop understanding of the person-level foundations and environmental conditions that enable occupational performance and are relevant to psychosocial practice. Theoretical frameworks and evidence-informed practice approaches and interventions will be addressed in class and weekly lab sessions. (3.0 credit units)

OT-883 Cognitive-Neurological Determinants of Occupation I
This course emphasizes the neuro-physiological organization of motor behaviour, sensory-motor integration, and the dynamic nature of the central nervous system and will provide a foundation for evaluating occupational performance with a focus on evaluation and intervention approaches for cognitive-perceptual and motor control problems for adults at three levels: impairment, strategy and function.Attention will be given to secondary motor performance problems. PREREQUISITE: OT-881 (4.0 credit units)

OT-884 Psychosocial Determinants of Occupation II
This course builds on attitudes, knowledge and skills developed in psychosocial dimensions of occupation I. Students will learn theoretical frameworks, practice approaches and evidence-informed interventions relevant to complex psychosocial issues within a range of specific occupational therapy practice contexts. Weekly labs will provide the opportunity for further skill development. (4 credit units) PREREQUISITE: OT-882*

OT-885* Physical Determinants of Occupation II
This course analyzes human occupation from the perspective of its anatomical, physiological and biomechanical dimensions. The course will focus on intervention methods used in physical rehabilitation to enable occupation in musculoskeletal conditions. The course is designed to build on concepts introduced in OT881 and will use an integrated case study format to further develop an understanding of movement of the human body as it relates to occupation. Theoretical frameworks and evidence-

informed practice approaches and interventions will be addressed in class and weekly lab sessions. PREREQUISITE: OT-881 (3.0 credit units)

OT-889* Cognitive-Neurological Determinants of Occupation II
This course builds on attitudes, knowledge and skills developed in Cognitive-Neurological Dimensions of Occupation I. Students will practice evaluations, and evidence-informed interventions relevant to complex cognitive-neurological issues within a range of neurological impairments in adults. Weekly labs will provide the opportunity for further skill development. PREREQUISITE: OT-883 (3.0 credit units)

OT-897* Critical Enquiry Foundations
This course prepares students for the completion of OT-898 by examining world views, research designs, criteria for study quality, and evidence-based practice. Students develop skills to pose clinical questions, systematically search the literature, appraise scientific articles, and use research to inform rehabilitation practice. PREREQUISITE: Registration in the occupational therapy program. (3.0 credit units)

OT-898 Critical Enquiry Project
Students will work with a faculty supervisor to complete a critical enquiry project. The project will enable students to apply critical inquiry skills by participation in an area of clinical investigation and to examine the relevance of findings to clinical practice. PREREQUISITE: OT-897* or permission of the course coordinator. (6.0 credit units)

PATHOLOGY AND MOLECULAR MEDICINE

PATH-822* Experimental Cancer Therapeutics
Intended for students engaged or interested in pre-clinical cancer research. Both medical and basic science trainees are encouraged to take this course. Specific areas to be covered include introduction to new drug development, molecular basis of oncogenic transformation and signalling pathways, challenges with current cancer therapeutics, molecular approaches to profiling human cancers as tools for identifying biochemical and genetic abnormalities and developing criteria for reliable prognostic indicators; strategies for novel target and drug discovery, as well as experimental drug delivery; novel imaging approaches to enhance the sensitivity of preclinical testing and selection of responsive patients; preclinical (in vitro and animal) models for validating experimental targets; clinical drug development and testing of novel anti-cancer drugs; and the molecular basis for variability in tumour responses. Half course, lectures and seminars.
Not offered 2018-19.
PREREQUISITES: Recommended courses: ANAT-311, BCHM-310, PHAR-340, MICR-360, PATH-310, CANC-440, or equivalents, or with permission of the department. The number of students may be restricted.

PATH-823* Cancer Biology
The aim of this course is to introduce and discuss essential questions in the basic science of oncology. Trainees with an interest in cancer research are encouraged to take this course. Topics include pathology of cancer, cancer genetics, growth factors, signal transduction, oncogenes, suppressor genes, early stage tumorigenesis, tumor immunology and metastasis. A general theme for the course will be mechanisms regulating neoplastic transformation and tumor progression. In order to provide a balance and high profile in all areas, various staff members in the Cancer Research Institute and associated departments have been selected as session leaders in this course. Half course, lectures and seminars; Fall term. L. Mulligan.
PREREQUISITES: Recommended courses: ANAT-311, BCHM-411 or BCHM-431, MICR-360 or equivalents, or with permission of the department. The number of students may be restricted.

PATH-826* The Molecular Basis of Disease
This course covers several diseases that highlight the genetic, biochemical, physiologic, anatomic, and general etiologic factors that play a role in the progression of each disease from its inception to death or recovery. Some of the topics will be drawn from the ongoing research within the Department of Pathology and Molecular Medicine. The

perspective will demonstrate that each disease is the result of an evolving interplay of genetic and environmental factors. (Jointly with PATH-430*. Additional work prescribed for graduate students.) Half-course, lectures and seminars; Winter term. D. Lillicrap.
PREREQUISITE: PATH-410 or ANAT-309, BCHM-310, PHGY-212, or equivalent. Class size will be limited to 12 students with preference given to undergraduate students.

PATH-827* Research Project in Pathology
Research projects in the physiological, biological, genetic and molecular basis of disease. Students will review the literature related to their proposed graduate research thesis project and write a series of essays on topics selected in consultation with a supervisory committee consisting of their supervisor and two other faculty. They will also develop a written draft research proposal that will be presented to their supervisory committee and defended in a final oral examination. To be taken by all students in the first full term of the graduate program. P.Greer (course coordinator).

PATH-828* Bioinformatics for Cancer Research
Bioinformatics is an essential component of biological and health science research given the ongoing developments in generating large amounts of data in short periods of time. This course introduces tools and methods to manage and analyze the results obtained in cancer research. Topics include study design, basic statistics for clinical and genetic research, data-mining approaches and alternative methods to statistics for data analysis, and signaling pathways analysis. The course will cover the appropriate pre-processing and data analysis techniques for various genetic data types such as microarray, tissue microarrays, methylation, NanoString, RNAseq, miRNAseq, proteomics and qRT- PCR. Students with little computing background, but who are interested in pursuing or collaborating with bioinformatic research, are encouraged to enroll.

PATH-830* (MSc)
PATH-930* (PhD) Pathology and Molecular Medicine Research Seminar Series
This seminar series consists of weekly presentations by visiting external speakers, Queen's faculty, and Departmental MSc and PhD students. Internal faculty and external visiting speakers will be selected by the Graduate Program coordinator with input from faculty and students.
MSc students will give 1/2 hour seminars in their first year, and one hour seminars in their second year; PhD students will give 1 hour seminars in their first and third years, and an exit seminar in their final year. Attendance by all Departmental graduate students is compulsory and will be monitored by the Graduate Program Coordinator. Departmental faculty will provide evaluations of student presentations consisting of a mark and written comments relating to introduction and background, presentation of

results and response to questions. A final mark and summary of faculty evaluations will be compiled by the coordinator and provided to the student and supervisor. Students are required to provide a written summary outlining their research progress to their supervisory committee five days prior to their seminar. Fall/Winter terms. P. Greer

PATH-899 Master's Thesis Research

PATH-999 Ph.D. Thesis Research

PHARMACEUTICAL AND HEALTHCARE MANAGEMENT AND INNOVATION

PHMI -871* Healthcare Innovation and Development

This course is designed to provide students with broad foundational knowledge of the scope,

ecosystem, and processes involved with healthcare discovery and innovation. The course will take students through historical and current processes of bringing a new medicine or medical device from discovery and development to regulatory approval, and highlight the careers within industry and institutions related to these processes. This six-week intensive course consists of online modules, as well as presentations from invited industry/external speakers. At the end of the course, students will have a broad understanding of the ecosystem of healthcare innovation.

PHMI- 872* Healthcare Management and Commercialization

This course builds on the concepts discussed in PHMI-871, and introduces students to the processes that must take place after a new healthcare innovation has completed development and passed regulatory approval. The course will explore the processes of healthcare commercialization and management, and highlight the careers within industry and institutions related to these processes. This six-week course consists of online modules, as well as presentations from individuals currently working in the field. At the end of the course, students will have acquired an overview of the processes involved with healthcare commercialization and management.

PHMI- 873 Internship in Healthcare Management and Innovation

During this full-time, six-month paid internship, students will receive valuable hands-on experience working with a private/public sector partner. Normally, an intern will be assigned to a specific department and project(s) with the external partner, but other options, such as rotations across several medical functions are also possible. The internship will include an academic component such as a research project, or critical report(s), and online modules. The nature of the research project or critical report(s) will be selected in concert with the external partner. (6.0 credit units).

PHARMACOLOGY AND TOXICOLOGY

EFFECTIVE 2014-2015, THE COURSES LISTED BELOW OR THE EQUIVALENT ARE UNDER THE DEPARTMENT OF BIOMEDICAL AND MOLECULAR SCIENCES. CURRENT COURSE NUMBERS AND DESCRIPTIONS CAN BE FOUND HERE: COURSES OF INSTRUCTION BIOMEDICAL AND MOLECULAR SCIENCES .

STUDENTS ENROLLED IN PHARMACOLOGY AND TOXICOLOGY PROGRAMS IN 2013-2014 OR EARLIER ENROL IN COURSES WITH THE COURSE CODES AND NUMBERS AS SHOWN BELOW.

PHAR-810* Advances in Neuropharmacology
Recent advances in understanding neurotransmission and pharmacology in the central nervous system will be discussed. The current literature describing progress in understanding molecular, cellular and behavioural aspects of brain function, and the impact of drugs and disease, will be examined. Winter; seminars and tutorials. Given in years ending with an uneven number. J.Reynolds PREREQUISITE: Permission of the Graduate Program required. Restricted enrollment.

PHAR-811* Principles of Drug Discovery and Development
An advanced course in which various aspects of the drug discovery and development process, from molecules to community, will be studied. The course comprises lectures, discussion and student seminars, based on recent literature. Topics encompass medicinal chemistry approaches to drug discovery, receptor theory, mechanisms of drug action, drug metabolism, pharmacokinetics, pharmacogenetics, drug resistance, clinical trials, and regulatory affairs. Fall, 3 hour seminar. Given in years ending with an even number. T.E. Massey PREREQUISITE: Permission of the Graduate Program required.

PHAR-815* Mechanistic Toxicology
An advanced, problem-based course focusing on current approaches to the study of mechanisms of chemical toxicity. Winter; 3 hour seminars and tutorials. Given in years ending with an even number. T.E. Massey PREREQUISITE: PHAR-416* or equivalent. Permission of the Graduate Program required.

PHAR-821* Pharmacology Seminar Program
Topics covered: selected topics in pharmacology and toxicology will be presented and discussed by staff, students, and visiting lecturers. Fall and winter; one hour per week. T. Ozolins. PREREQUISITE: Permission of the Graduate Program required.

PHAR-840* Principles of General Pharmacology I
Lectures, tutorial sessions, laboratory project, and self-directed critical analysis of a current research area in Pharmacology. Topics include: principles of drug action, autonomic and autacoid pharmacology, and toxicology. Fall; 3 lecture hours and 3 laboratory hours. K. Nakatsu
EXCLUSION: PHAR-340*. Permission of the Graduate Program required.

PHAR-850* Principles of General Pharmacology II
Lectures, tutorial sessions, laboratory projects, drug literature evaluation, and self-directed critical analysis of a current research area in Pharmacology. Topics include: neuropsychopharmacology, cardiovascular-renal pharmacology, agents acting on the endocrine system, and chemotherapy. Winter; 3 lecture hours and 3 laboratory hours. D.H. Maurice
EXCLUSION: : PHAR-450*. Permission of the Graduate Program required.

PHAR-853* Cellular and Molecular Cardiovascular Sciences
An advanced inter-disciplinary course studying the anatomy, pharmacology and physiology of the cardiovascular system at the molecular and cellular level (same as ANAT-853* and PHGY-853*). The course comprises lectures, discussion and student seminars based on recent literature. Winter; 3 hour seminar. Given in years with an odd number. PREREQUISITE: Undergraduate degree in Life Science or equivalent. Permission of the Graduate Program required.

PHAR-854* Cardiovascular Sciences: Tissues and Systems
An advanced inter-disciplinary course studying the integrative aspects of the anatomy, pharmacology and physiology of the cardiovascular system at the tissue, organ and system level (same as ANAT-854* and PHGY-854*). The course comprises lectures, discussion and student seminars based on recent literature. Topics will include integrated short and long term control of the circulation, structure-function of the heart and blood vessels, characteristics and treatments of pathological conditions. Fall; 3 hour lecture/seminar. M.A. Adams PREREQUISITE: Undergraduate degree in Life Science or equivalent. Permission of Graduate Program required.

PHAR-899 Master's Thesis Research

PHAR-999 Ph.D. Thesis Research

PHILOSOPHY

The graduate courses offered, and the content of those courses, vary from year to year according to interests of members of the Department and students. A list of the expected offerings and detailed course descriptions is available from the Department. Students should consult or write the Coordinator of Graduate Studies with respect to courses offered.

Courses denoted with an asterisk (*) are three term hours (3.0 credit units).

PHIL-802* Moral Philosophy I
Winter. R. Kumar.

PHIL-803* Moral Philosophy II
Fall. K. Gordon-Solmon.

PHIL-805* Social and Political Philosophy I
Not offered 2018-19.

PHIL-806* Social and Political Philosophy II
Fall. C. Sypnowich.

PHIL-807* Social and Political Philosophy III
Not offered 2018-19.

PHIL-808* Philosophy of Law
Winter. A. Macleod.

PHIL-809* Colloquium in Political, Legal and Moral Philosophy
This course examines new work in political, legal and moral philosophy or at the interstice of these three. One 3-hour seminar. Fall. J. Thomas and G. Webber

PHIL 810* Topics in the History of Philosophy
An in-depth of examination of a central figure or topic in the history of Philosophy. Particular topic in any year will be determined by the instructor.
2018-19 Topic: 19th and 20th century Indian Philosophy.
Fall. R. Murty.

PHIL-812* Philosophy of Culture
Not offered 2018-19.

PHIL-820* Ethical Issues I
Not offered 2018-19.

PHIL-821* Ethical Issues II
Winter. L. Guenther.

PHIL-831* Ancient Philosophy I
Not offered 2018-19.

PHIL-832* Ancient Philosophy II
Not offered 2018-19.

PHIL-835* Modern Philosophy
Not offered 2018-19.

PHIL-836* 19th Century Philosophy
Not offered 2018-19.

PHIL-841* 20th Century Philosophy I
Fall. D. Bakhurst.

PHIL-842* 20th Century Philosophy II
Not offered 2018-19.

PHIL-845* Major Figures I
Fall. J. Miller

PHIL-846* Major Figures II
Not offered 2018-19.

PHIL-847* Major Figures III
Not offered 2018-19.

PHIL-850* Epistemology I
Not offered 2018-19.

PHIL-851* Epistemology II
Winter. E. Paul.

PHIL-852* Metaphysics I
Not offered 2018-19.

PHIL-854* Feminist Philosophy
Not offered 2018-19.

PHIL-859* Philosophy of Language I
Not offered 2018-19.

PHIL-860* Philosophy of Language II
Not offered 2018-19.

PHIL-863* Metaphysics II
Fall. J. Mozersky.

PHIL-864* Philosophy of Mind
Winter. N. Salay.

PHIL-866* Philosophy of Art
Not offered 2018-19.

PHIL-867* Hermeneutics
Not offered 2018-19.

PHIL-870* Philosophy of Science
Winter. S. Sismondo.

PHIL-871* Philosophy of Medicine
Not offered 2018-19.

PHIL-873* Philosophical Logic
Winter. A. Mercier.

PHIL-893* Ethics and the Environment
Winter. M. (Mick) Smith

PHIL-897* Ethics and Animals
Not offered 2018-19.

PHIL-898 Master's Research Project

PHIL-899 Master's Thesis Research

PHIL-989* Clinical Practicum in Biomedical Ethics
Winter. C. Cline/D. Campbell.

PHIL-990* Philosophical Methods
Not offered 2018-19.

PHIL-991*-995* Special Directed Studies
Not offered 2018-19.

PHIL-999 Ph.D. Thesis Research

PHYSICAL THERAPY

PT-822* Business Practices in Rehabilitation

Weight= 3 credit units

This course encompasses the areas of public versus private sector business practices, including, but not limited to, finance, accounting, human resources, venues, marketing/advertising, and negotiation. The emphasis will be on the practical application of the material and, normally, the development of a useable business plan. Community practitioners and small business leaders act as Community Advisors and/or assist in the delivery of this course. The intent of this learning opportunity is to facilitate the students' acquiring the fundamental business skills necessary for career development in any sector of health care.
Pre-requisites: successful completion of all Year 1 courses in the MScPT Program and PT-883, or approval from the PT Program.

PT-841* Professional Practice

Weight = 4 credit units
This course covers 8 broad areas of rehabilitation practice including: the Canadian health care system, the rehabilitation professions, professionalism, jurisprudence (legislation and regulation) in rehabilitation, biomedical ethics and ethical issues in rehabilitation, the cultural competency continuum in practice, educational theory and its applications in rehabilitation and health and disability. This framework is to be used by the student as a reference and knowledge base to be accessed throughout their university education and, subsequently, as a foundation for clinical practice. The theoretical basis for all topic areas will be discussed and the essentials for the development of a basic level of problem solving skills in the practical applications of professional issues and clinical education theory will be reviewed and practiced.

PT-850* Functional Anatomy

Weight= 4 credit units

Students will consolidate knowledge about gross and functional human anatomy as a foundation for the musculoskeletal and cardiorespirology courses which relate to physical therapy assessment and intervention planning. Musculoskeletal structures of the upper limb, lower limb, head, cervical, thoracic, lumbar and pelvic regions will be reviewed, including details of how muscles and joints function. Neural, cardiovascular,

and pulmonary structures will be reviewed, focusing on structures in which pathology leads or contributes to movement dysfunction. Lab Component.

PT-851* Muscle and Joint Function
Weight = 4.5 credit units
This course will advance students' knowledge in functional anatomy, joint biomechanics and muscle neurophysiology, with specific application to the clinical assessment of upper and lower limb function. Exercise prescription guidelines for muscle strength, power and endurance will be introduced, and a general framework for exercise prescription in clinical practice developed. Lab Component.

PT-852* Electro-physical agents

Weight = 4.5 credit units
Students will gain knowledge of the physical principles underlying the application of electro-physical agents (EPAs) for therapeutic and diagnostic purposes. Upon completion of the course students will be able to describe the physiological effects, indications, precautions, contra-indications and application techniques of selected EPAs. These topics will include discussion of pain, inflammation and regaining joint mobility. Students will demonstrate clinical decision making related to the use of EPAs, which will include incorporating research evidence to inform their practice. Students will also demonstrate understanding of the fundamental principles of diagnostic imaging of the musculo-skeletal system. Lab component.

PT-853* Foundational Clinical Skills
Weight = 4.5 credit units
Students will apply their knowledge of professional issues, anatomy, physiology, biomechanics, physical assessment and intervention to develop skills in patient interactions and handling, mobility and function. Topics include communication skills, documentation, balance and coordination, gait, mobility aids, wheelchairs, transfers, functional task analysis & outcome measures, and hydrotherapy. Using a case-based approach, students will be able to assess and interpret findings with regard to altered mobility. Lab component.

PT-854* Diagnosing Dysfunction
Weight = 4.5 credit units
Students will apply knowledge in anatomy, physiology and biomechanics towards processes of diagnosing physical dysfunction. Students will gain skills in history-taking, physical assessment, and clinical reasoning to assist with the diagnosis and treatment of conditions primarily involving the extremities. Lab component.

PT-855* Cardiorespiratory Function I
Weight = 4.5 credit units
Students will gain knowledge in surface anatomy, pathophysiology, physical assessment and intervention related to exercise capacity, mobility and function. Conditions that affect function due to limitations or variation in gas exchange will be included, whether they are primarily cardiac, respiratory, neurological or musculoskeletal. The emphasis will be on effective assessment and treatment of conditions that affect primarily a single body system. Lab component. Pre-requisite: successful completion of PT-850, PT-851, PT-852, PT-853, PT-854, and PT-881, or approval from the PT Program.

PT-856* Neuromotor Function I
Weight = 4 credit units
Students will gain knowledge in the neuroanatomical and neurophysiological bases of motor performance. Students will also learn how to integrate this knowledge for interpreting clinical presentation of representative pathological conditions that compromise neuromotor performance in adults. In the neuroanatomy lab component, students will develop three dimensional knowledge of the human nervous system through study of anatomical specimens. In the clinical lab component students will learn skills in clinical assessment of sensory-motor functions. Understanding the conceptual neurophysiological basis of clinical assessment tools will be emphasized. Pre-requisite: successful completion of PT-850, PT-851, PT-852, PT-853, PT854, and PT-881, or approval from the PT Program.

PT-857* Cardiorespiratory Function II
Weight = 4.5 credit units
Students will gain proficiency in applied exercise physiology and produce safe and effective exercise prescriptions in clinical populations. In addition, students will incorporate their critical thinking, problem solving and clinical skills in the study of complex cardiorespiratory cases related to rehabilitation, acute and critical contexts of care. Topics include physiological monitoring, oxygen delivery and ventilation. Lab component. Pre-requisite: successful completion of all Year 1 courses in the MScPT Program, or approval from the PT Program.

PT-858* Neuromotor Function II
Weight= 4.5 credit units
Students will gain knowledge regarding a range of conditions that compromise neuromotor performance in adults. Students will gain skills in identifying movement problems, setting goals and planning physiotherapeutic intervention for adults with compromised neuromotor performance. Lab component. Pre-requisite: successful

completion of PT-850, PT-851, PT-852, PT-853, PT854, and PT-881, or approval from the PT Program.

PT-859* Spinal Disorders
Weight= 4.5 credit units
Students will gain knowledge in anatomy, physiology, biomechanics, physical assessment and clinical reasoning in order to assist with intervention related to disorders of the axial skeleton including musculoskeletal, neurological, and cardiorespiratory sequelae. The emphasis will be on conditions that occur in adulthood. Lab component.Pre-requisite: successful completion of PT-850, PT-851, PT-852, PT-853, PT854, and PT-881, or approval from the PT Program.

PT-861* Paediatrics
Weight= 4.5 credit units
Students will gain knowledge of typical and atypical development, and skill in assessment of children and youth with selected developmental, neurological and orthopaedic conditions. Changes in musculoskeletal status, movement coordination, exercise capacity, posture and gait control, and motor learning will be included. Principles of family-centered and interprofessional care will be applied. Students will gain an understanding of the leadership and advocacy roles of physiotherapists within the contexts of paediatric care including end-of-life issues. Lab and Interprofessional components. Pre-requisite: successful completion of all Year 1 courses in the MScPT Program, or approval from the PT Program.

PT-863* Gerontology
Weight= 4 credit units
Students will gain knowledge and skill in applying assessment principles related to representative conditions common in older adults. Changes in musculoskeletal status, exercise capacity and neuromotor control with aging are included. Students will gain understanding of the need for advocacy and education in the contexts in which physical therapists work with older clients. Social and cognitive factors that may affect the motor function of older adults are discussed. End of life and palliative care issues are included. Lab component.Pre-requisite: successful completion of all Year 1 courses in the MScPT Program, or approval from the PT Program.

PT-864* Complex Health Conditions
Weight= 4 credit units
Students will gain knowledge about the ways in which clients may present with

movement dysfunction arising from multiple causes including disorders of musculoskeletal, neurological and cardiorespiratory functions. Students will develop skills to systematically assess complex, unforeseen problems and deliver patient-centred care.This course consists of five modules: a) rheumatology, b) lower extremity amputations, c) burn injury, and d) oncology and e) narrative practice. Clinical Skills Lab Component. Pre-requisite: successful completion of all Year 1 courses in the MScPT Program and PT-883, or approval from the PT Program.

PT-865* Motor Function Occupation
Weight= 4.5 credit units
Students will gain knowledge and skill in the assessment and management of individuals with musculoskeletal injuries related to physical work, sport and leisure activities. They will be able to critically evaluate the literature related to ergonomic assessment and intervention, including psychophysical, physiological and biomechanical approaches. Topics in occupational health and safety related to injury prevention, as well as advanced manual therapy approaches to the assessment and management of musculoskeletal injury will be included. Lab component. Pre-requisite: successful completion of all Year 1 courses in the MScPT Program, or approval from the PT Program.

PT-881 Clinical Placement I
Weight= 6 credit units.
A 6-week full-time placement providing experience in physiotherapy practice in a clinical facility or community-based agency. During their first clinical placement students will be expected to apply the skills, knowledge and behaviours presented during the first two academic blocks, with a focus on musculoskeletal physiotherapy practice. By the end of the clinical placement students should be proficient in assessment and management skills, able to provide quality care to clients with non-complex, single system, primarily musculoskeletal conditions, with guidance and supervision. Interprofessional component. Prerequisites: PT-850, PT-851, PT-852, PT-853, & PT-854 or approval from the PT program.

PT-882 Clinical Placement II
Weight= 6 credit units.
A 6-week full-time placement providing experience in physiotherapy practice in a clinical facility or community-based agency. During their second clinical placement students will be expected to apply the skills, knowledge and behaviours that were presented during the Year I academic blocks. By the end of the clinical placement

students should be proficient in assessment and management skills with single system to more complex representative musculoskeletal, neurological or cardiorespiratory conditions in adults. Pre-requisite: successful completion of PT-841, PT-850, PT-851, PT-852, PT-853, PT-854, and PT-881, or approval from the PT Program.

PT-883 Clinical Placement III

Weight= 6 credit units.

A 6-week full-time placement providing experience in physiotherapy practice in a clinical facility or community-based agency. During their third clinical placement students will be expected to further develop their skills, knowledge and behaviours and integrate material presented during the academic blocks VII and VIII. By the end of the clinical placement students should be developing increased proficiency in assessment and management skills with single system to more complex representative conditions involving all body systems. Prerequisites: PT-882, PT-863, PT-861 and/or PT-857 or approval from the PT Program.

PT-884 Clinical Placement IV

Weight= 6 credit units.

A 6-week full-time placement providing experience in physiotherapy practice in a clinical facility or community-based agency. During their fourth clinical placement students will be expected to further develop their skills, knowledge and behaviours and integrate material presented during block 10 in year two. By the end of the clinical placement students should have developed skills to work efficiently as a member of a multidisciplinary health care team, providing consultation and care to clients of all ages and with simple to complex conditions. In addition, students will be expected to demonstrate knowledge of the business, administrative and legal issues related to clinical practice. Pre-requisites: successful completion of PT-883, PT-857, PT-861, PT-863, PT-864, and PT-865, or approval from the PT Program.

PT-885 Clinical Placement V

Weight= 6 credit units

A 6-week full-time placement providing experience in physiotherapy practice in a clinical facility or community-based agency. Students will be expected to consolidate their skills, knowledge and behaviours and integrate all material presented throughout the academic curriculum. By the end of the final clinical placement students should be able to consistently and efficiently provide quality care with simple and complex clients of all ages in a variety of clinical environments, requiring guidance or supervision only when addressing new or complex situations. Students will be expected to demonstrate knowledge of the business, administrative and legal issues related to clinical practice.

Students will be ready for independent clinical practice. Prerequisite: PT-884 or approval from the PT Program.

PT-897* Critical Enquiry Foundations

This course prepares students for the completion of PT-898 by examining world views, research designs, criteria for study quality, and evidence-based practice. Students develop skills to pose clinical questions, systematically search the literature, appraise scientific articles, and use research to inform rehabilitation practice. PREREQUISITE: Registration in the physical therapy program.

PT-898 Critical Enquiry Project

Weight=6 credit units

Students will work with a faculty supervisor to complete a critical enquiry project. The project will enable students to apply critical inquiry skills by participation in an area of clinical investigation and to examine the relevance of findings to clinical practice. PREREQUISITES: PT-897* or permission of the course coordinator.

PHYSICS, ENGINEERING PHYSICS AND ASTRONOMY

NOTE: The list of courses offered in any academic session can be found on the Physics departmental web page
NOTE: PHYS-840**, PHYS-841**, PHYS-842**, PHYS-843**, PHYS-844*, PHYS-845**, PHYS-846**, PHYS-847**, PHYS-848**, PHYS-849** and PHYS-861** are six week modules and are equivalent to one half of a term course as indicated by the **.

APSC- 896* Engineering Leadership and Innovation
This course is designed to develop a range of skills essential for engineering professional practice in both the public and private sectors. The course will focus on; Engineering Leadership and Innovation including its application in project management. The course content will be presented through lectures, case studies, panel discussions and an interactive serious game.

PHYS-813* Galactic Astronomy
This course describes the material content, energetics, formation and evolution of the Galaxy, and places our Galaxy in the context of galaxies, in general. Topics include the interstellar medium, stellar populations, dynamics, the Galactic center and the Galactic halo.
EXCLUSION: PHYS-433

PHYS-814* Extragalactic Astronomy
This course describes the material content, energetics and evolution of the Universe beyond our Galaxy. Topics include global properties of galaxies and clusters, the extragalactic distance scale, extragalactic radio sources, large scale structure, dark matter, and cosmology.
EXCLUSION: PHYS-434*

PHYS-815* Stellar Structure and Evolution
This course provides a detailed account of the formation, structure, evolution and end-points of stars. Topics include the HR diagram, nuclear energy generation, radiative transport and stellar model building, supernovae, white dwarfs, neutron stars, pulsars and black holes.
EXCLUSION: PHYS-435

PHYS-816* Cosmic Gas Dynamics
The Navier-Stokes equations and the magneto-hydrodynamic equations for compressible flow are reviewed briefly and discussed in terms of simple solutions. The theory of shock waves is presented and the important concept of 'self-similar flow' is

introduced. These fundamentals are applied to the discussion of MHD wave propagation, gravitational collapse, stellar and galactic 'winds', supernovae, shock and ionization fronts in the interstellar medium.

PHYS-817* Astronomical Dynamics
Due to its long range and lack of shielding, the Newtonian gravitational force plays a major role in the dynamical evolution of astronomical systems ranging in scale from planetary systems to clusters of galaxies. In this course we examine common features across these scales as well as specific features of importance in the gravitational dynamics of the Solar System and other planetary systems, star clusters, galaxies and clusters of galaxies.

PHYS-822* Fluid Mechanics
Theory and phenomena of the physics of fluids. A study of the usual incompressible and compressible flows; rotating frames; stability and turbulence; wave motion including non-linear waves and shocks; kinetic theory and transport phenomena; magnetofluid dynamics; plasma; relativistic fluids; and quantum fluids.

PHYS-823* Gravitation and Cosmology
Einstein's theory of gravity is developed from fundamental principles to a level which enables the student to read some of the current literature. The course includes an introduction to computer algebra, an essential element of a modern introduction to Einstein's theory. (Offered jointly with PHYS-414.)
EXCLUSION: PHYS-414.

PHYS-825* Advanced Quantum Theory
A graduate level course in quantum mechanics suitable for students from all research areas in the department. Topics include second quantization, many-particle systems and Hartree-Fock theory, symmetries and invariance in quantum theory, density matrices, relativistic quantum mechanics and the Dirac equation, quantum information and quantum computing. Prerequisite: PHYS-345 or equivalent

PHYS-831* Electromagnetic Theory
An advanced but non-relativistic discussion of classical electromagnetic theory intended for students in applied/engineering physics and condensed matter physics and with an emphasis on the generation and propagation of electromagnetic waves. Topics include polarization, multipoles and electromagnetic fields in macroscopic media, diffraction theory, simple radiating systems, and the propagation of waves in dispersive media and plasmas. Additional topics may include guided waves, nonlinear

optics, and the optics ofanisotropic media.
PREREQUISITE: PHYS-332* or equivalent

PHYS-832* Classical Electrodynamics
An advanced course in relativistic electrodynamics, intended for students in subatomic physics and astrophysics. Topics include the covariant formulation of Maxwell's equations, relativistic motion of charged particles in electromagnetic fields and the resultant radiated fields, synchrotron radiation, Cerenkov radiation, and the inverse Compton effect are discussed. Additionally, the course may offer a brief treatment of magnetohydrodynamics. Applications to problems in astrophysics and high energy particle physics will be discussed.

PHYS-840 Astronomical Instrumentation**
A survey of instrumentation and techniques for astronomical ground and space-based observations. Topics include theory of measurement; imaging; interferometry and spectroscopy of electromagnetic radiation at radio, infrared, optical, and X-ray wavelengths; data analysis.

PHYS-841 Experimental Methods for Particle Astrophysics**
An introduction to experimental techniques employed in modern particle astrophysics experiments. Topics will include a description of the interactions of particles with matter and the detection techniques for topics of current interest, including neutrinos, dark matter, double beta decay and supernovae.

PHYS-842 Formation of Structure in the Universe**
A course covering modern theories of the formation of cosmological structure. Topics include the theory of gravitational instability in the linear regime; the statistics of density fields; cosmic flows; non-linear instability in the context of the cold dark matter universe; N-body simulations; comparisons of theory with the observed Universe.

PHYS-843 High Energy Astroparticle Physics**
A survey of astrophysical sources and mechanisms that produce high energy particles (gamma rays, neutrinos, and cosmic rays). Propagation of the particles and techniques for detecting high energy particles will be discussed.

PHYS-844 Neutrino Physics and Astrophysics**
An introduction to neutrino physics and astrophysics. Topics include neutrino mass and mixing; solar neutrinos; supernova neutrinos; ultra high energy neutrino astronomy.

PHYS-845 Astrophysics of the Interstellar Medium**
This module provides an overview of the interstellar medium in the Milky Way (and other galaxies), including the hot and warm ionized components, the HI and molecular components, and dust. Relevant observations as well as some of the physics of these components will also be introduced.
PREREQUISITE: permission of the instructor.

PHYS-846 Physics and Phenomena of Stellar Atmospheres**
This course provides an introduction to the physics of stellar atmospheres, including bulk stellar properties, concepts of local thermodynamic equilibrium, excitation and ionization equilibria, radiative energy transport, convective instability, continuous opacity, model stellar atmospheres, and stellar continua. This is followed by a development of the basic tools of quantitative spectroscopy, including concepts of line opacity and line profiles, contribution functions, hydrogen line profiles, stellar abundance determinations, and microscopic and macroscopic velocity fields. The course concludes with a discussion of special topics such as stellar magnetic fields, non-LTE, stellar winds, stellar pulsation, and stellar activity including chromospheres and coronae.
PREREQUISITE: Permission of the instructor.

PHYS-847 Planet Formation**
Our understanding of the processes involved in planet formation have been revolutionized by astronomical discoveries of the Kuiper belt beyond Neptune in our Solar System and an increasingly large number of remarkably diverse planetary systems around other stars. This graduate module will summarize the observational constraints and review our theoretical understanding of the interplay of the physical processes leading to the formation of planets. PREREQUISITE: Permission of the instructor.

PHYS-848 High Density Astrophysics**
This module studies astrophysical situations in which Newtonian dynamics fails at the local scale. Topics include: Neutron Stars: Origin, current understanding of their structure, interaction with their environment and the importance of binary pulsars in verifying the status of general relativity. Black Holes: Origin, current understanding of their uniqueness properties in the static and stationary cases, interaction with their environment and the importance of black holes in a cosmological context.
PREREQUISITE: Permission of the instructor.

PHYS-849 Model Fitting and Bayesian Inference for Physics and Astronomy**
This module provides an overview of model building and Bayesian probability theory

as applied to problems in astrophysics and particle astrophysics. Topics include a comparison of Bayesian and frequentist probability theory, erros, and Markov chain Monte Carlo. The module will aim to provide a hands-on experience and students will be asked to carry out statistical analyses of actual data.

PHYS-856* Magnetics
Introduction to: magnetic measurements, classes of magnetic materials, domain theory, permanent magnets, electromagnets, calculations of magnetic fields and forces, solenoid and superconducting coils, eddy currents. Followed by selected review and design topics covering magnetic devices and engineering from: magnetic recording, magnetic disks, magnetic bubbles, magnetic thin film memories, magnetic separation, magnetic amplifiers, magnetic levitation.

PHYS-857* Surface Engineering and Analysis
An outline of the fundamental concepts and usage of modern techniques for the production and analysis of surfaces and thin films. Topics include ultra-high vacuum principles, surface thermodynamics and adsorption, electron and ion microscopy and spectroscopy, electron and x-ray diffraction, scanning probe microscopy, and growth of thin films by vapour deposition.
EXCLUSION: PHYS-487

PHYS-858* Introduction to Medical Physics
This course introduces a number of topics in the field of medical physics. Included are: the physics of radiation therapy, ultrasound imaging, magnetic resonance imaging, x-ray imaging, radioisotope imaging and image reconstruction techniques.
Exclusion: PHYS-495

PHYS-859* Principles of Microfabrication
A multi-disciplinary graduate course on the principles of microfabrication with research and industrial perspectives. It aims to help students from a broad range of Applied Sciences understand the global trend to miniaturize devices (microcircuits, transducers, displays) and to integrate them into microsystems. An ongoing articulation of generic principles is illustrated both within and beyond the mainstream microelectronics domain. Linkages to the emerging world of nanoscale fabrication are explored.

PHYS-860* Applied Science Topics in Micro/Nano-technology
A multi-disciplinary graduate course on advanced topics in microfabrication with research perspectives. It aims to help students from a broad range of Applied Sciences with special interests in micro/nano-technology to relate the physics of selected advanced topics to current opportunities and problems in their research. Instructions

integrate contributions from several faculty members. An ongoing articulation of the interface between micro- and nano-scale methodologies will be maintained.

PHYS-861 Physics of the Early Universe**
The history of the Universe from the Big Bang to the formation of the cosmic radiation background. Topics include shortcomings of the standard cosmological model; inflation; baryogenesis; the quark-hadron phase transition; big bang nucleosynthesis; dark matter; the epoch of last scattering.

PHYS-870* Statistical Mechanics
The principles of classical and quantum statistical mechanics with application to the theories of the gaseous, liquid, and solid states of matter. Review of thermodynamics, fundamentals. Fermi-Dirac and Bose-Einstein statistics, solids and phase transitions.

PHYS-880* Elements of Solid State Physics I
The structural, electronic, optical and transport properties of solids. (Offered jointly with PHYS-480*.) EXCLUSION: PHYS-480*

PHYS-881* Elements of Solid State Physics II
A continuation of PHYS-880*. Topics include the vibrational, magnetic, and superconducting properties of solids. PREREQUISITE: PHYS-880* or equivalent.

PHYS-882* Nonlinear and Quantum Optics
The concepts of nonlinear optics are central to most modern research in quantum optics and light matter interactions. Nonlinear optics is the discipline in physics in which the electric polarization density of the medium is studied as a nonlinear function of the light field. Quantum optics concerns the interaction of light with quantum systems, and the quantum nature of light itself. Recent years have seen a rapid growth of activity in research involving both nonlinear and quantum optics, enabled in part by new condensed matter materials (especially semiconductor nanostructures) and ultrafast laser systems. This course will introduce the basic principles of nonlinear and quantum optics and make a connection to a selection of modern research topics in these areas. PREREQUISITE: Undergraduate electromagnetism, quantum mechanics and solid state physics at a level satisfactory to the instructor.

PHYS-891* Nuclear and Particle Physics
A systematic introduction to nuclear and particle physics. Topics include basic nuclear properties; size mass, decay and reactions; shell model of nuclear structure; magnetic moments; gamma and beta decay; quark model of elementary particles; and strong,

electromagnetic and weak interactions
EXCLUSION: PHYS-490.

PHYS-892* Particle Physics
A course in particle physics, covering topics such as: the physics of particles; symmetries and conservation laws; quark models of hadrons; the parton model and QCD; weak interactions.

PHYS-899 Master's Thesis Research

PHYS-901 Graduate Student Seminar Series
A series of research seminar presented by students in the PhD programme summarizing the important issues in their research areas. Presentation of a seminar is required of every PhD student in each of their second and third years. To be offered every fall/winter; graded Pass/Fail.

PHYS-904* Science Leadership and Management
The Science Leadership and Management course will be delivered over twelve 3-hour sessions to Chemistry and Physics students in either of the first two years of their PhD studies (or other graduate students with permission from the course coordinator and supervisor). The first and last four-week sessions will focus on the development and application of leadership skills, and the second four-week session will focus on the development of management skills, that are useful in scientific positions in industry and academia. To be offered every fall; graded Pass/Fail. Exclusion: CHEM-904*

PHYS-913* Current Topics in Astronomical Research
A discussion of recent problems in astronomy based on current literature. Possible topics include: radio jets in double radio sources, emission from the galactic centre and early type star formation.

PHYS-914* Current Topics in Astrophysical Research
A discussion of recent problems in astrophysics based on current literature. Possible topics include: clock synchronization in general relativity, gravitational bounce and the effect of gravitational radiation in very close binary systems.

PHYS-921* Relativistic Quantum Theory
Relativistic single particle equations for bosons and fermions, (spinors, helicity, etc.). Elementary quantum electrodynamics including the S-matrix, covariant perturbation theory and Feynman diagrams. Introduction to weak and strong interactions
PREREQUISITE: PHYS-825* or equivalent.

PHYS-923* Many-body Quantum Theory
Hartree-Fock Theory. Second quantization, perturbation methods and diagrammatic representations. Density matrix, Green functions and canonical transformations. Applications to atomic, molecular, and nuclear structure and to condensed matter physics. PREREQUISITE: PHYS-825* or equivalent.

PHYS-926* Advanced Gravitation Theory
Topics in general relativity of current interest. Examples of such topics are: the development of singularities, gravitational entropy, neutrino trapping, signatures of gravitational waves. PREREQUISITE: PHYS-823* or equivalent.

PHYS-958* Current Topics in Medical Physics
A discussion of recent problems in medical physics based on current literature. Possible topics include: adaptive radiation therapy, Monte Carlo simulations in radiation physics, imaging in radiation therapy, image reconstruction, and radiation dose planning algorithms. PREREQUISITE: PHYS-858* or Equivalent

PHYS-982* Advanced Topics in Condensed Matter Physics
Topics in condensed matter physics of current interest. Examples of such topics are: surface physics, magnetotransport properties, polymers and disordered solids, low temperature physics. PREREQUISITE: PHYS-880* and PHYS-881* or equivalent.

PHYS-983* Advanced Solid State Theory
Topics include pseudopotential theory of metals, band theory of ordered and disordered solids, linear response theory, density functional theory, field theories of phase transitions. PREREQUISITE: PHYS-825*, PHYS-880* and PHYS-881* or equivalent.

PHYS-990 Nuclear Models
Nuclear shell model. The Nilsson model. The Bohr-Mottelson collective model. The core-excitation model. The SU (3) model for light nuclei. The optical model in nuclear reactions. PREREQUISITE: PHYS-825* and PHYS-891*.

PHYS-994* Current Topics In Nuclear and Particle Physics
A discussion of selected topics of current interest in nuclear and particle physics. Possible subjects include one or more from weak interactions and neutrinos, particle astrophysics, and grand unified theories.

PHYS-995* Advanced Topics in Sub-Atomic Theory
A course primarily for students in theoretical physics. Various topics of current interest

will be discussed, such as the interacting boson model, and investigations of the nuclear response to leptonic, pionic, and hadronic probes. PREREQUISITE: PHYS-825 and PHYS-891* or PHYS-892*.

PHYS-999 Ph.D. Thesis Research

PHYSIOLOGY

EFFECTIVE 2014-2015, THE COURSES LISTED BELOW OR THE EQUIVALENT ARE UNDER THE DEPARTMENT OF BIOMEDICAL AND MOLECULAR SCIENCES. CURRENT COURSE NUMBERS AND DESCRIPTIONS CAN BE FOUND HERE: COURSES OF INSTRUCTION BIOMEDICAL AND MOLECULAR SCIENCES .

STUDENTS ENROLLED IN PHYSIOLOGY PROGRAMS IN 2013-2014 OR EARLIER ENROL IN COURSES WITH THE COURSE CODES AND NUMBERS AS SHOWN BELOW.

PHGY-810* Current Concepts in Physiology
An advanced course on current research of selected areas of physiology. This course is comprised of critical lectures and discussion based on recent literature. Compulsory for all new M.Sc. students in Physiology. 3 hour seminar. Fall or Winter. J. Fisher. PREREQUISITE: PHGY-214/812 or equivalent or permission of the course supervisor. Enrolment is limited with priority given to Physiology graduate students.

PHGY-814 Mammalian Physiology
A course for new graduate students with backgrounds in other disciplines. The functions of organs, body systems, and the integration of functions in the whole body. Students evaluated by regularly scheduled tests and take-home exams. Three, 1-hour lectures. Fall and Winter. D. Van Vugt. (6.0 credit units) PREREQUISITE: Admission to the PHGY graduate program and permission of the instructor.

PHGY-824* Ion Channels of Excitable Cells
The electrophysiology and biophysics of neuronal and cardiac membranes; molecular biology, structure, and function of ion channels. Students will learn to critically evaluate scientific literature. Instructional format is primarily student-led seminars. Enrolment is limited. (Offered even years only; jointly with PHGY-424). Winter. N. Magoski. PREREQUISITES: PHGY-214 (or equivalent) with a minimum of 65 percent (or equivalent) or permission of the course supervisor.

PHGY-826* Current Concepts in Sensorimotor Integration
A course for graduate students to explore more advanced concepts of sensorimotor integration in the nervous system. This is a multi-disciplinary lecture/seminar course with active student participation expected. The course will consist of weekly sessions focusing on specific concepts such as feature detection, population coding, sensorimotor transformations, reflexes versus voluntary control, central pattern generators. Normally

offered concurrently with PSYC-924*. PREREQUISITE: NSCI-323* or equivalent. EXCLUSION: PSYC-924*.

PHGY-836* Advanced Physiology
An advanced course for honours and graduate students in which selected areas of physiology are studied in depth. Two hours seminar. Fall or Winter. N. Magoski. PREREQUISITE: Eligibility for admission to this course will be determined by the student's experience in physiology and allied sciences.

PHGY-840* Advanced Techniques in Digestive Sciences I
A laboratory-based course providing an advanced survey of state-of-the-art methodologies. This course is designed to give the student experience in cellular, molecular and whole tissue techniques with applications to digestive and related sciences. Fall term; 2 hours seminar / 4 hours laboratory on alternate weeks. R.J. MacLeod. PREREQUISITE: Undergraduate degree in biological, biochemical, or life sciences; permission of the course supervisor. Enrollment is limited.

PHGY-841* Advanced Techniques in Digestive Sciences II
A laboratory-based course designed to explore in greater depth a sub-group of the techniques studied in PHGY-840* and involving at least two full weeks of intensive laboratory work. The techniques will be chosen to complement the student's graduate research. R.J. MacLeod. PREREQUISITE: PHGY-840*.

PHGY-844* Gastrointestinal Physiology
The mechanisms and regulation of motor, secretory, digestive and absorptive functions of the gastrointestinal tract are considered. Students will be required to prepare and present reviews of original literature. Fall/winter terms. (Enrolment in both terms is required to achieve credit.) One hour lecture/week; 1 hour seminar alt. wks. M. Blennerhassett. Offered jointly with PHGY-444. PREREQUISITE: PHGY-214 or equivalent. Enrolment is limited.

PHGY-853* Cellular and Molecular Cardiovascular Sciences
An advanced inter-disciplinary course studying the anatomy, pharmacology and physiology of the cardiovascular system at the molecular and cellular level. The course is comprised of lectures, discussion and student seminars based on recent literature. (Same as ANAT-853* and PHAR-853*). 3 hour seminar. Winter. Offered in odd years. D. Maurice. PREREQUISITE: Undergraduate degree in Life Science or equivalent or permission from department.

PHGY-854* Cardiovascular Sciences
A study of the anatomy, pharmacology and physiology of the cardiovascular system based on lectures, seminars, laboratories and selected readings (same as ANAT-854* and PHAR-854*). Topics will include structure-function of the heart and blood vessels, mechanisms of signal transduction, drug effects on second messenger systems, the cardiac pump, integrated cardiovascular control, arterial oxygen transport, control of blood pressure and hypertension. (Offered jointly with LISC-454*.) Additional work will be prescribed for graduate students. Lectures, seminars and laboratories. Fall. M. Adams. PREREQUISITES OR COREQUISITES: PHAR-420 and PHGY-214 and -812 or their equivalents. Enrolment limited.

PHGY-855* Respiratory Physiology
An advanced course examining respiratory mechanics, gas exchange, acid-base balance and the neural control of breathing. Students are required to prepare and present reviews of literature and interpret results of laboratory experiments. 2 hours lecture/seminar or 6 hours laboratory. Offered jointly with PHGY-355. Winter. J.T. Fisher PREREQUISITE: A minimum of C (2.0) in PHGY-214 or equivalent.

PHGY-884* Essential Research Skills
Students learn essential research skills such as preparation and critical review of a research proposal, basic theory of physiological instrumentation, histology, and other state-of-art techniques. S. Iscoe.

PHGY-894* Neuroendocrinology
Students are exposed to an in-depth study of selected topics in neuroendocrinology and neuroendocrine techniques. Neuroendocrinology refers to the neural control of endocrine and autonomic function. Areas of focus will include CNS control of cardiovascular function, reproduction, and appetite. In addition, students will learn to critically evaluate scientific literature. Instructional format is primarily student- led seminars. (Offered odd years; jointly with PHGY-494). Winter. D. Van Vugt. PREREQUISITE: PHGY-214 or equivalent.

PHGY-897* Physiology Seminar Program and Research Project
Students will be required to attend the Departmental seminar program and present a seminar based upon their graduate thesis research. Students will also provide a proposal for their thesis research which includes a review of the related literature. Departmental faculty will evaluate both the seminar and the proposal/review. Enrolment extending over 6 terms (2 years); required for new M.Sc. Physiology graduate students. 1 hour seminar/week; Fall, Winter and Summer. N. Magoski. PREREQUISITE: PHGY-214 or equivalent or permission of the course coordinator.

PHGY-899 Master's Thesis Research

PHGY-999 Ph.D. Thesis Research

POLICY STUDIES (PUBLIC ADMINISTRATION)

NOTE: Most courses are 3.0 credit units in weight; however MPA-808, MPA-823 and MPA-824 are 1.5 credit units in weight, and MPA-825 is 6.0 credit units in weight.

MPA-800* Governing Institutions
An examination of the institutions and processes involved in addressing policy problems. While particular attention is given to Canadian governments, the course considers other influences on the decision making process emanating from the third sector and the global environment.

MPA-802* Approaches to Policy Analysis
This course introduces students to a broad range of research strategies, methods and techniques used in policy analysis. It explores recent developments in analytical techniques, with particular reference to their underlying assumptions and their relevance to problems facing policy analysts and decision makers.

MPA-804* Principles of Economics
This course introduces basic concepts in microeconomics and macroeconomics to students who have had limited exposure to economics. It focuses on issues relevant to the public sector.

MPA-805* Quantitative Analysis
This course introduces basic statistics and multivariate regression to students. The focus is on interpreting quantitative information contained in reports and studies commonly found in the public sector.

MPA-806* Analytical Tools for Policy Research
This course introduces students to a range of quantitative and qualitative methods and helps them understand their use and limitation in policy research. Students will apply selected techniques, interpret data, assess results and report findings relating to specific policy issues. Open to PMPA students only.

MPA-808 Analytical Methods for Public Policy
This course provides intermediate level training in applied statistics for students studying public and non-profit management, policy analysis, and related areas. The aim is to provide students with the knowledge of analytical methods to effectively and responsibly interpret and apply statistical analysis conducted by others.1.5 credit hours.

MPA-809* Management in the Public Sector
This course provides students with practice in the skills required for effective leadership of public organizations. Focusing on the general management level, the course addresses the tasks of integrating managerial functions, establishing organizational goals and executing organizational strategies. Particular emphasis is placed on problems of adaptation and innovation under fiscal restraint.

MPA-810* Policy Challenges
This course introduces basic policy concepts, the policy process and elements of the machinery of government showing the links between the foundations of policy analysis and contemporary public issues. (3.0 credit units).

MPA-811* Government, Society and Public Policy
This course looks at the role of the state and the interaction between the state and society in making fundamental choices in western nations. It examines a number of theories of the state, and then explores major challenges to contemporary governance, such as globalization, nationalism, the politics of diversity, and changing conceptions of democracy.

MPA-812* Law and Public Policy
An examination of the ways in which common law and constitutional law shape the exercise of statutory authority, with special reference to how judicial review influences policy making.

MPA-813* How Governments Decide
Successful government depends upon the smooth meshing of the political and bureaucratic dimensions of the state. This course examines how different governments organize, staff and operate their executive management systems. A second theme is to highlight the necessity of global comparison to gain knowledge through reference to different public policies and processes.

MPA-814* Intergovernmental Policy
This course examines how policy making and the substance of policy are affected by federalism. Attention focuses on patterns of interaction among governments, and between governments and organized interests in Canada, and in other federal or quasi-federal systems. A major subject is how such patterns of interaction are affected by the structure of political institutions, the allocation of powers, and fiscal considerations.

MPA-815* Economic Analysis
This course focuses on economic issues relevant to the public sector. A variety of

microeconomic and macroeconomic topics related to the analysis of policy issues in included.
Prerequisite: MPA-804 or equivalent

MPA-816* Quantitative Program Evaluation
This course focuses on program evaluation and cost benefit analysis including program theory, impact analysis and implementation analysis. PREREQUISITE: MPA-805 or equivalent

MPA-823 Public Policy Leadership
This course introduces students to concepts of leadership and their applicability to the analysis, development and implementation of public policies, with the objective of enhancing their effectiveness in the workplace. Through readings, presentations and independent study, as well as group exercises and case studies, students will learn to distinguish between leadership and management, develop an appreciation of the qualities for successful leadership in public policy and begin to assess their own strengths and weaknesses for leadership roles. They will also compare diverse models of leadership in western organizations and indigenous communities. (1.5 credit units)

MPA- 824 Policy Leadership in Practice
Building on the first-year core curriculum, students will identify and assess the competencies for effective policy leadership to mobilize human and material resources to transform good ideas into effective actions with measurable results. Through simulations and case studies, led by proven policy leaders, students will analyze the successful or failed application of leadership and followership qualities in the development and implementation of policy responses to real-world problems. (1.5 credit units). Prerequisite: MPA-823

MPA-825 Policy Integration Project
This team project provides an integrative experience, requiring students to apply their learning to a specific policy issue through the stages of problem definition, research and analysis, diagnostic recommendations, stakeholder identification and engagement, implementation issues including budgeting, communications and measuring performance. Students will produce a set of incremental papers and presentations, culminating in a complete project plan. (6.0 credit units) Prerequisite: MPA-824*

MPA-826* Ethics in the Public Service
This course examines ethical problems that typically arise in the formulation and implementation of public policy. It considers how conceptions of ethical problems have shifted over time; strategies for thinking about and resolving ethical issues; and the

design of institutional arrangements that minimize the risk of harm from ethical lapses in the public sector.

MPA-827* Financial Management in the Public Sector
An examination of the principles of financial management applicable to the public sector, including an introduction to budgeting, financial planning, capital and current expenditure forecasting and program costing.

MPA-832* Defence Management
This course examines key policy decisions that shape the formulation and administration of defence policy in Canada. Seminars will be constructed around various current policy and administrative issues including applied defence economics and budgeting; personnel administration; capital procurement; armed forces and society; and the governmental and Canadian Forces organization for national defence.

MPA-836* Health and Public Policy in Canada
This course introduces students to the social, economic and political forces that shape health policy, and the institutions that are responsible for its design and implementation. The course also surveys some of the major current issues in the field.
Exclusion: EPID-803* Health Services and Policy Applications

MPA-838* Economic Analysis of Health Policy
This course is designed to provide students with an introduction to economic concepts and analysis relevant to health, health care and health care systems.

MPA-839* Social Policy
This course examines the historical development of the welfare state in Canada in comparison with other western nations. It focuses on the major social security programs and their recent restructuring in response to demographic, economic and political changes at the national and international levels.

MPA-840* Economics of Social Policy
This course applies microeconomic analysis to the field of social policy. The course briefly considers the role of economics in policy analysis and the rationale for government intervention. Policy areas to be analyzed may include: poverty, income maintenance, unemployment insurance, welfare, childcare, child benefits, the retirement system.

MPA-842* Field Work
This course focuses on providing practical policy experience to the students in the field. The content may vary. It will be graded on a pass/fail grade.

MPA-843* Trade and Public Policy
An introduction to the public policy issues associated with international trade, with particular reference to the World Trade Organization.

MPA-844* Canadian Economic Policy
This course brings an economic perspective to major policy issues facing Canada and its trading partners. The topics selected for discussion will vary from year to year. This course assumes that students have completed a basic course in economic analysis. (Offered jointly with ECON-881*.)

MPA-846* Public Policy Issues in Africa
This course presents students with an introduction to policy making in Africa with a particular focus on Ghana. It will examine the influence of history and context upon policy actors, structures and policy choices. The role of the state, civil society, external actors and institutions in policy making and shaping policy outcomes will be explored. The major challenges to policy making and policy development in Africa will be discussed. This course is graded on a Pass/Fail basis. (Delivered at the University of Ghana, Legon to the participants in the SPS-University of Ghana interchange program).

MPA-847* Environmental Policy
This course surveys the factors that influence the actions of major institutions, such as governments, industry and public interest groups, with respect to environmental issues. It looks for broad designations of competing approaches, such as command and control versus incentive-based instruments, to such tasks as the setting of standards, regulation and compliance, management of risks and the realization of effective public participation. It also attempts to look behind the pragmatic policy formulations to identify the fundamental values that shape attitudes toward environmental issues.

MPA-848* Immigration Policy in Canada
This course examines the factors contributing to the development of immigration policy in Canada, the changing trends in immigration in Canada, the impact of immigration and refugee movements on public policies and programs, jurisdictional issues and the role of nongovernmental organizations.

MPA-849* Behavioural Public Finance
Behavioural public finance introduces students to a psychologically rich perspective on

human behaviour for economic analysis. This powerful new framework reshapes core public finance concepts such as moral hazard, deadweight loss and incidence, and provides a deeper analysis of government intervention, market failure and social welfare.

MPA-850* Risk Management
Every day governments manage risks, from the safety of new chemicals to security from terrorism, from ongoing financial risks at the aggregate level to financial risks at the individual program/policy level. Managing risks and ensuring accountability is especially challenging when public services are delivered by third parties. This course reviews basic concepts used to assess and manage risks, and to communicate risk to the public.

MPA-851* Public Policy and the Third Sector
This course examines the diverse nature of the nonprofit sector, its expanding role in policymaking and service delivery, and the evolving relationship among government, nonprofit organizations and the corporate sectors. Key issues include accountability and governance, leadership, law and liability, ethics and values, and policy influence.

MPA-852* Stakeholder Management
This course is designed to familiarize students with various forms of political participation and representation in Canada. The course examines practical approaches and tools for fostering stakeholder engagement in decision-making. Students will also learn how to plan and design a stakeholder engagement initiative.

MPA-853* Topics in Public Policy and the Third Sector
This course focuses on selected topics relating to public policy and the third sector. The content may vary from year to year.

MPA-857* Policy Issues and Debate in China
This course presents students with a introduction to terms and dialogue used in current policy debates in China. It will provide students with a general introduction to Mandarin Chinese and focus on terms that are often used in debates and dialogues with officials. Students will also be taught the interpretation of certain expressions and phrases that politicians in China commonly use and in what contexts should they be employed. (Delivered at Fudan University, China, to participants in the SPS-Fudan interchange program.)

MPA-858* Chinese Economic Reform
This course is broadly concerned with the political economy of the economic reform in

China. It will also provide students with a general introduction to the Chinese history, geography, culture and pre-reform economic system. With this background in place students will learn lessons from recent Chinese experience concerning privatization and the reform of the state-owned enterprises, dual economy and reforms in rural and financial sectors, impacts of deregulation and reforming of state monopolies. Finally, students will discuss globalization and the current challenges facing the Chinese economy. (Delivered at Fudan University, China, to participants in the SPS-Fudan interchange program.)

MPA-859* Indigenous Law and Policy
An introduction to Indigenous and Canadian Law (treaties, legislation, cases and practice) and how it affects the lives of Indigenous Peoples and communities in Canada.

MPA-890* Internship
This non-credit program allows students to combine their formal academic studies with on-the-job experience, normally through a four-month placement with a government department or other public sector organization. The internship is normally scheduled in the fall term, following a student's completion of three terms of academic study and open only to students registered in the MPA Full-time program.

MPA-891* Topics in Health Policy
This course focuses on selected topics in health policy. The content may vary from year to year.

MPA-892* Topics in Social Policy
This course focuses on selected topics in social policy. The content may vary from year to year.

MPA-893* Special Topics
2018-19 Topic: Data Analytics
This seminar, offered by a regular or visiting faculty, focuses on a topic related to the faculty member's specific research interests and expertise.

MPA-894* Professional Placement
This field course provides students with an opportunity to apply their knowledge, enhance their professional skills and gain practical experience by combining formal studies with a cooperative or internship work placement. Students selected by host employers are placed with a government agency normally for a minimum 10 week period in approved positions. To consolidate their learning from this practical experience, participating students are required to submit a final report, in accordance

with specific guidelines, which will be graded on a pass/fail basis, by a faculty member. Work-study placements may be paid or unpaid. This is a 3.0 credit unit course, is graded on a pass/fail basis and does not count towards the requirements of the degree.

MPA-895* Topics in Public Management
This course focuses on selected topics in public management. The content may vary from year to year.

MPA-896* Topics in Public Policy
This course focuses on selected topics in public policy. The content may vary from year to year.

MPA-897* Directed Reading
This course is designed for individual students with special interests that may not be satisfied through course offerings in a given year. It will normally be a directed reading course, under the close supervision of an assigned faculty member with expertise in the chosen subject field. Permission of the Graduate Coordinator required.

MPA-898 Master's Research Project

Other Elective Courses
The School also offers other elective courses each year, typically in the spring term. The specific topics of the seminars vary annually but generally include issues in economic and social policy, public management, urban government, regulatory administration, etc. A list of spring courses is available from the School in the late fall. These courses are offered under the following numbers, MPA-860* to MPA-889*.

POLITICAL STUDIES

Not all courses listed below will be offered in any one year. Early in the summer, the Department publishes a list of courses offered in the coming year, as well as other changes that are made after the publication of the Calendar. Please see our Department of Political Studies website for the latest information.

Courses marked † are offered jointly with a 400-level (fourth-year under-graduate) course.

CANADIAN POLITICS

POLS-810* Canadian Politics
A critical analysis of the literature on Canadian politics. Topics covered include parliamentary institutions, federalism, the courts, multiculturalism and citizenship, Aboriginal politics, women and politics, political economy, interest groups and social movements, the mass media, political parties, public opinion and voting. Fall. J. Hiebert

†POLS-814* Politics in Quebec
An introduction to the political history of Quebec: the development of ideologies (including nationalism), constitutional developments, and the building of the Quebec state during the Quiet Revolution. Some contemporary issues in Quebec politics, and the relationship between Quebec and the rest of Canada. (Offered jointly with POLS-414*). Not offered 2018-19.

†POLS-818* Canadian Federalism
An examination of the evolution and operation of the Canadian federal system. Topics include the concept and meaning of federalism, the implications of provincial/federal interdependence, and the politics of constitutional reform. (Offered jointly with POLS-415*). Not offered 2018-19.

†POLS-819* Political Communication
Communication in the modern state with special attention to the role of the mass media, the concept of public opinion in political and social philosophy, and a theoretical and empirical study of mass communication. (Offered jointly with POLS-419*). Not offered 2018-19.

†POLS-821* Elections
An examination of the importance of elections to the maintenance of democratic systems. Six themes are discussed: the history and theory of democratic participation;

the legal framework; campaign organization; why people vote the way they do; the manifestation of social cleavages during campaigns; and the future of electoral participation. Canadian examples are placed in a comparative context. (Offered jointly with POLS-421*) One 3-hour seminar. Not offered 2018-19.

†POLS-822* Public Opinion
This course presents a critical analysis of opinion research, examining both the ways in which its results have been interpreted and used and the methodologies by which it is conducted. This analysis is set in the context of a discussion of assumptions in liberal-democratic theory about the citizen's role in politics and government. (Offered jointly with POLS-422*) One 3-hour seminar. Not offered 2018-19.

POLS-829* Canadian Political Institutions
An analysis of the role of political institutions in Canadian politics. The course will examine institutionalist theories in the Canadian context, and provide an in-depth analysis of selected aspects of the institutional framework of Canadian politics. Winter. J. Rose.

COMPARATIVE POLITICS

POLS-830* Comparative Politics I
A systematic examination of political systems in order to account for significant similarities and variations among them. At the core of the field are two issues: what are the major contending approaches to determining what is significant, and what is the nature of the comparative method? This course aims to develop criteria for choosing between approaches and research strategies for empirical work. One 3-hour seminar. Winter. G. Amyot.

POLS-831* Comparative Politics II
This course deals with major topics in the current literature in the sub-field, including democracy and democratization, institutions and parties, political economy, political culture, selected policy areas, or particular parties, movements, and interest groups. Greater stress is laid on the empirical reference of theoretical approaches than in POLS-830*. Winter. P. Chakrabarti.
One 3-hour seminar.

POLS-832* Theories and Politics of Nationalism
This course examines major theoretical debates in the scholarship of nationalism and evaluates influential contributions to the understanding of nationalism in sub-state and

global politics. Readings combine broader theoretical approaches and empirical studies. Winter. Z. Csergő

†POLS-833* Problems of American Democracy
This seminar focuses on the recent debates about the sources of malaise in the American system, with a special emphasis on understanding the dynamics of mass public opinion and the factors influencing public disaffection from political institutions. (Offered jointly with POLS-433*). Not offered 2018-19.

POLS-838* Politics of Ethnic Conflict
This course will explore a variety of theoretical and empirical issues related to the politics of ethnic conflict. The politics of ethnic conflict encompass a wide range of issues that present distinct challenges to states and societies. Themes invested in this course include the construction of ethnic identities, sources of conflict, types of mobilization, state-ethnicity relations, changes in territorial and social boundaries, and the complex interaction between ethnicity and democracy. Fall. O. Haklai.

†POLS-839* Topics in American Politics
The focus of this seminar will vary from year to year depending on the research interests of the faculty members involved. See the departmental homepage for further details. (Offered jointly with POLS-439*). Not offered 2018-19.

POLS-840* Comparative Politics of Development
A critical survey of the main theoretical approaches to development, including modernization theory, neo-Marxism, underdeveloped theory and neo-liberalism. These are considered in relation to issues of ethnicity and culture, the role of the nation state in development, technology and industrialization and the globalization of the world economy. One 3-hour seminar.Not offered 2018-19.

†POLS-842* Topics in Latin American Politics
An examination of topics such as economic policy, social movements, parties and elections, women in politics, culture, immigration, Chicano politics, and guerrilla movements and political violence. (Offered jointly with POLS-442*) One 3-hour seminar. Not offered 2018-19.

POLS-843* Gender and Globalization
The role of women in international resistance acts as an organizational theme. An essential aspect of this is conceptualizing various forms of oppression-based on gender, race and class- in the context of the world system. One 3-hour seminar. Not offered 2018-19.

POLS-844* Macro-Political Regulation of Ethnic Conflict
The course offers an advanced study of how states respond to ethnic conflict and diversity. The course will focus on the best analytical (empirical) explanations and normative critiques of the different state responses to diversity. Not offered 2018-19.

†POLS-846* Citizenship and Non-Citizenship
Focussing on issues of citizenship and non-citizenship in the modern world. How issues of nationality and nationalism, minority rights, gender, class, race and ethnicity, and immigration status impact on the rights and obligations of citizenship is central to the politics of these debates. The relevance of these issues to the current Canadian context will be an ongoing theme of the course. (Offered jointly with POLS-446*) One 3 hour seminar. Not offered 2018-19.

POLS-848* Democracy and Globalization
The course examines how domestic and international politics intersect to produce transition processes in contemporary "Third Wave democracies" and how national and global forces continue to shape political development in the post-transition period. Not offered 2018-19.

POLITICAL THEORY

POLS-850* Political Theory
This course provides an introduction to contemporary normative political theory. The course will focus on the analysis basic concepts, such as liberty, equality, power, and authority, their use in different theoretical traditions, and their application to current debates about politics and policy. Not offered 2018-19.

POLS-851* Global Justice
An exploration of issues of justice in international politics from a normative and philosophical perspective. The course will explore the nature of our duties to people in other countries, the basis of the nation state and the limits of its territorial claims, and the justification of global institutions. The course will cover topics such as just war theory, humanitarian intervention. secession, migration, human rights, and global distributive justice. Winter. M. Moore.

POLS-852* Contemporary Liberal-Democratic Theory
This course examines the main theoretical approaches in contemporary liberal-democratic theory including theories of justice, conceptions of equality and the 'deliberative turn' in democratic theory. One 3-hour seminar. Not offered 2018-19.

POLS-853* Topics in Political Theory
2018-19 Topic: Democracy
An examination of the reorientations in contemporary political thought. One 3-hour seminar. Fall. A. Lister.

†POLS-856* Debates in Contemporary Political Theory
An investigation into different theoretical perspectives on the issue of identity and the importance of these perspectives for the politics of identity. Theories of gender, race, class, nation, and sexual orientation, from a variety of perspectives, including Marxist, feminist, postmodern, and psychoanalytic theory. (Offered jointly with POLS-456*). Winter. E. MacDonald.

POLS-857* Science and Justice
The word "science" comes from the Latin scientia which means "having knowledge". What is the relation between science and normative political ideals like democracy, justice and equality? The topics covered in any given year will vary, but may include the ethical, legal and social consequences of advances in the biomedical or environmental sciences. Winter. C. Farrelly.
Prerequisites: M.A. or Ph.D. student in Political Studies, or permission of instructor.

POLS-858* Pol, Legal and Moral Phil Colloquium
This course examines new work in political, legal and moral philosophy or at the interstice of these three. One 3-hour seminar.

†POLS-859* Marxist Theories and Debates
A study of a selected topic or topics in Marxist theory with an emphasis on the reading of original texts and recent interpretations and applications. (Offered jointly with POLS-459*) One 3-hour seminar. Not offered 2018-19.

INTERNATIONAL POLITICS

POLS-860* International Relations
This course is a comprehensive examination of the evolution and current state of the field of International Relations (IR). It covers international theory, the structure of the international system, key concepts, readings from the canon, and themes in the study of IR such as war, security, foreign policy, the state, gender, global systems, and concepts of power. This course also locates IR in relation to Global Political Economy (GPE) and other related fields of study. Fall. D. Haglund.

POLS-861* International Security
This course will focus on foreign policy analysis and international security, with a focus on alliances, defence cooperation, and issues affecting national and international peace and security. Not offered 2018-19.

†POLS-862* Topics in American Foreign Policy
The course examines major trends in American foreign policy covering domestic as well as external variables in pre- and post-war administrations. Emphasis is placed on the USA's global role, the part it plays in international organizations and alliance systems, and the conflicts and controversies that characterize them. Fall. J. Sokolsky.

POLS-864* International Political Economy
This course is designed to introduce graduate students to the systematic study of international relations and international political economy. It will attempt to address a wide range of theoretical approaches and issues within the field, paying particular attention to the foreign economic policies of advanced industrial states and the various issues surrounding the redistribution of wealth and influence in the contemporary international system. Fall. W. Cox.

POLS-865* Political Economy of Global Development
This course examines the political, social, spatial and ideological dimensions of the global financial system, with special reference to the role of debt. By drawing on an interdisciplinary lens, we explore a wide range of issues and theories relating to finance and debt in both the developed and developing worlds. Not offered 2018-19.

POLS-867* Approaches to Global Governance
An exploration of the theory and practice of global governance which traces the emergence of the concept in modern international relations; the academic and public-policy debates to which it has given rise; and its application in the design and work of selected international institutions. Cross Listed with MPA-855*. Winter. S. Martel.

†POLS-869* Issues in Canadian Foreign Policy:
This course focuses on Canadian-American relations, emphasizing the interaction both in bilateral and multilateral contexts. Primary concern will be with issues of trade, investment and resources, with some attention paid to security issues. (Offered jointly with POLS-469*) One 3-hour seminar. Not offered 2018-19.

GENDER AND POLITICS

POLS-843* also relevant to the field. Not offered 2018-19.

POLS-880* Gender and Politics
This course addresses the diverse and developing field of Gender and Politics in the discipline of Political Science. The focus will vary depending on the instructor, addressing topics such as: representation; feminist methodology; identity; gender and work; gender and citizenship; the politics of the family; queer theory; intersectionality of race, gender and class; and gender and globalization. Winter. M. Little.

†POLS-883* Feminist Theory and Political Science
This course examines the ways in which political science has characteristically studied women's relationships to political life and, by way of comparison, what feminist perspectives bring to political study. The purpose of the inquiry is to situate feminist theory within the broad corpus of theoretical approaches to political study. (Offered jointly with POLS-483*). Not offered 2018-19.

OTHER COURSES

†POLS-886* The Politics of Rights
An examination of contemporary debates about whether rights provide an appropriate critical standard for evaluating state action and looks at different institutional methods to assess the justification of state actions. (Offered jointly with POLS-486*) One 3-hour seminar. Not offered 2018-19.

†POLS-891* Topics in Political Studies
Seminars offered by regular and visiting faculty on topics related to their own research or interests. See the departmental brochure for further details. Not offered 2018-19.

POLS-898 Master's Research Project

POLS-899 Master's Thesis Research

POLS-900* Methods of Political Studies
This course covers approaches to the discipline, the philosophy of social science, and issues and problems in research design. This course is compulsory for doctoral students who have not already completed a similar graduate course. Doctoral students who have completed a similar course will take another course as their sixth. Students in the Political Studies MA program are eligible to take this course with permission from the Graduate Coordinator. Fall. G. Amyot

POLS-999 Ph.D. Thesis Research

DIRECTED READING COURSES

POLS-901* Readings in Political Studies I
Reading course in political science.

POLS-902* Readings in Political Studies II
Reading course in political science.

POLS-910* Field Course in Canadian Politics
Fall. J. Hiebert

POLS-911* Readings in Canadian Politics

POLS-930* Field Course in Comparative Politics
Winter. G. Amyot

POLS-931* Readings in Comparative Politics

POLS-941* Readings in Comparative Politics of Development

POLS-950* Field Course in Political Theory

POLS-951* Readings in Political Theory

POLS 953* Topics in Political Theory
This course focuses on a specific debate or topic in political theory. The course might focus on the work of a leading theorist, or on an important theoretical tradition, or it might engage a number of different theoretical perspectives on a particular political problem.

POLS-960* Field Course in International Relations
Fall. D. Haglund

POLS-961* Readings in International Relations

POLS-980* Field Course in Gender and Politics
Winter. M. Little

POLS-981* Readings in Gender and Politics
Reading course in gender and politics.

Courses in Related Fields

Students may also take courses in cognate fields, such as Economics, Geography, History, Law, Philosophy, Policy Studies, etc.

PROTEIN FUNCTION DISCOVERY

PROT-824* Biophysical Analysis of Proteins
This course will consist of seminars and lectures covering topics such as equilibrium binding, enzyme kinetics, hydrodynamics, fluorescence, light scattering and spectroscopy. Protein structure determination using x-ray crystallography and NMR spectroscopy will be covered. Specific emphasis will be placed on the application of biophysical techniques to gain important insights into protein function, interactions and structure. A good working knowledge of introductory calculus and chemistry is required. Offered jointly with BCHM-824. PREREQUISITE BCHM-313 or its equivalent or permission of the coordinator. Enrolment is limited. Fall term, three hours. M.E. Nesheim

PROT-825* Practical Approaches to Protein Function Discovery
A laboratory-based course designed to introduce students to a variety of state-of-the-art techniques to characterize proteins. Students will receive hands-on experience in techniques such as cell culture, protein expression and purification, 2D gel electrophoresis, mass spectrometry, analytical ultracentrifugation, surface plasmon resonance, micro-calorimetry, NMR spectroscopy, x-ray crystallography, immunofluorescence techniques and confocal laser microscopy . Students will learn the proper use of equipment and how to collect, analyze and present experimental data. Enrolment is limited. Fall-winter terms. Tutorials and laboratory. A. Mak
COREQUISITE PROT-824

PROT-826* Laboratory Rotations in Protein Function Discovery Research
Students carry out three 10 week-long research rotations in the laboratories of faculty associated with the Collaborative Graduate Program. Rotations are chosen according to the interests of the students and in consultation with faculty. Upon joining a lab, the student becomes a fully participating member of the research group, engaging in various research and research-related activities. The rotations introduce students to many of the skills and concepts that they will use throughout their careers and provide a basis for the student's selection of a research area in which to perform dissertation research. At the end of each rotation period students will be evaluated on oral/written presentations.
Enrolment is limited. Fall-winter terms. Laboratory research. G.P. Côté
COREQUISITE PROT-824 and PROT-825

PSYCHOLOGY

All courses are half courses (3.0 credit units) (with the exception of PSYC-899, PSYC-993, and PSYC-999) taught in the fall or winter term. Not all courses are offered in any one year. If a course is not offered in any one year it is often offered in the subsequent year. The list of the courses that will be offered in the upcoming academic year can be obtained from the Department at psycgrad.queensu.ca.

PSYC-801* Design of Experiments
Topics include: The logic of the test for significance and controversies concerning it; ANOVA and its underlying linear model for between- subject, within-subject and split-plot designs; orthogonal comparisons for trend analysis and for special contrasts; restricted randomization and the randomized-block design; partial confounding in latin-squares; balancing conditions against trend; hierarchical designs; ANOVA and multiple correlation; designs including organismic variables; random- effect models and the fixed-effect fallacy; data transformations and non-parametric tests. Fall; M. Sabbagh. Lectures (3 hrs) and tutorials (1½ hrs).

PSYC-802* Introduction to Multivariate Analysis
Topics include: History of Multivariate Techniques, Matrix Algebra, Data Assumptions and Preparation, Multiple Regression, Canonical Correlation, Multivariate Analysis of Variance, and Discriminant Function Analysis. Lectures (3 hrs) and tutorials (1½ hrs). Winter; L. Jacobson.
PREREQUISITE: PSYC-801* or equivalent.

PSYC-805*, 806* Introductory Assessment
These courses constitute an introduction to the practical aspects of clinical assessment. In PSYC-805* students are given skills training and practice in the use of tests of adult intelligence, memory and vocational counseling. In PSYC-806* the emphasis is on tests of children's intelligence, learning and affect. Fall (805) (3 hrs.). L. Kilik/K. Buell; Winter (806) (2 hrs.). K. Benn

PSYC-809* Child-Adolescent Clinical Psychology
Provides an overview of normal and abnormal development from conception to adolescence. Presentations balance theoretical controversies, basic research, and practical applications surrounding development principles considered in both the promotion of competence and the prevention/treatment of disorder.

PSYC-811*,812*,907*,908* Brain, Behaviour and Cognitive Science (BBCS) Research Seminar

Designed to facilitate professional development, increase scientific dialogue, and enhance collaboration and scientific group problem-solving in the broad field of brain, behaviour and cognitive science. Faculty and students will lead discussions of critical topics in the field. Marked on a Pass/Fail basis. Fall; seminar (2 hrs). 812-Fall; R. Flanagan

PSYC-825* Seminars in Psychology
Students attend diverse seminars to develop skills in listening, synthesizing and critical thinking while expanding the breadth of their background in psychology and cognate disciplines. Attendance may be extended over six terms (2 years) with students registering only in the term during which they complete the course.Enrollment is limited to graduate students in Psychology. Fall/Winter; M. Chivers.

PSYC-827* Adult Clinical Psychology
In PSYC-827* major areas of adult psychopathology are emphasized including anxiety and mood disorders, schizophrenia and personality disorders. (2½ hrs).

PSYC-829* Ethical and Professional Issues
Designed to raise students' awareness of ethical principles and expose them to issues and perspectives related to their training as professionals. Seminar (2 hrs). Winter; D. Cotton

PSYC-833* Foundations of Cognition & Perception
The course goal is to provide a foundation for the theoretical and empirical study of perceptual and cognitive processes. The topics include, but are not limited to, perceptual organization, object recognition, language, attention, learning and memory. The course will focus on key papers in the field and enduring theoretical issues. SEMINAR (2 Hrs.)

PSYC-834* Embodied Cognition
The framework of "embodied cognition" considers cognition a skilful activity that continuously generates and refines models about the world around us. Cognition, according to this view, emerges from lawful relations between motor output and sensory input. The course traces the development of this idea by discussing both theoretical and experimental literature considering contributions of a variety of fields (e.g., philosophy, artificial intelligence, robotics, neuroscience, and psychology). You will learn how this framework contributes to our understanding of the nature of intelligence, self-awareness, consciousness, and social identity. PREREQUISITE: PSYC 215 or PSYC 221 or COGS 201 or equivalent.

PSYC-838*,839* Introductory Clinical Practica
Students choose two practica from a variety of applied settings. These experiences are designed to introduce students to functioning in a clinical setting. (One day per wk for a total of 120 hrs per course); Fall; Winter;Summer. C. Bowie

PSYC-841*,851*,852* Pro-Seminars in Developmental Psychology
Attended by both faculty and students who present research in their specialty areas and with the focus being on research design issues. The content will vary to some extent depending on the research areas represented by members of the class. Marked pass/fail based on attendance. Seminar (2 hrs bi-weekly). 851: Fall/Winter; T. Hollenstein.

PSYC-842* Current Theories in Developmental Psychology: Cognitive Development
Students are exposed to current theory (and historical antecedents) within the field of cognitive developmental psychology. Topics will vary based on the expertise of the faculty instructor and thus may cover theory within evolutionary and comparative frameworks of cognitive development, epigenetic and systems approaches to cognitive development, developmental cognitive neuroscience methods, and developmental psychopathology. (3hrs). Fall; M. Sabbagh.

PSYC-843* Current Theories in Developmental Psychology II: Social Development
Students are exposed to current theory (and historical antecedents) within the field of social developmental psychology. Topics will vary based on the expertise of the faculty instructor and thus may cover theory within evolutionary and comparative frameworks of social development, epigenetic and systems approaches to social development, social-cognitive neuroscience methods, and developmental psychopathology. (2 hrs.).

PSYC-846* Psychology and the Law
The major focus of attention is procedural justice pre-sentencing. Topics include eyewitness memory, police identification procedures, jury selection, credibility of witness testimony, expert testimony, and jury decision making with the major emphasis on eyewitness issues. (3 hrs)

PSYC-847* Treatment Theory and Process
Students are given an introduction to the major theories and basic skills involved in interviewing, cognitive-behavioural therapy, and therapeutic processes. Course content balances theoretical controversies, basic research, and practical applications. A blend of classroom instruction, videotaped interviews, observation, modeling, feedback and supervised practice is used. (3 hrs.)

PSYC-853* Infancy
An overview of the major theoretical and methodological issues and a review of current research in the area of infant studies. Topics cover perceptual, cognitive and social development of both typical and atypical infant populations. Seminar (2 hrs).

PSYC-854* Cognitive and Conceptual Development
Current theoretical and methodological issues in cognitive development research, covering the development of perception, memory, thinking as well as social cognition. Seminar (2 hrs.)

PSYC-855* Language Development
Provides an overview of current theoretical and methodological approaches to early language development. Specific topics include: the rate and content of early language development, mechanisms underlying word learning, and syntactic development. Particular emphasis is placed on understanding how cognitive advances in the infancy and toddler periods impact children's language acquisition skills. Seminar (2 hrs)

PSYC-856* Socioemotional Development
Building on theories of socialization and the development of emotional reactivity and regulation, this course will proceed chronologically from birth through adolescence. Readings of empirical and theoretical papers will cover various topics including family and peer relationships, specific emotions, developmental psychopathology, and cultural contexts. Seminar (2 hrs)

PSYC-857* Atypical Development
An in-depth investigation of the linguistic, cognitive and social development of children with various neurodevelopmental disorders, including autism spectrum disorders, specific language impairment, Down syndrome, and Williams syndrome, among others.

PSYC-858* Introductory Intervention Skills Practicum
Offered at Health, Counselling and Disability Services. Provides training in interviewing, assessment and intervention skills needed in dealing with the wide range of clinical, learning, and career problems encountered by university students. Spring (35 hrs total). This course is a prerequisite for practica at Health, Counselling and Disability Services.

PSYC-859* Social Relationships
Development occurs within the context of relationships. This course will review the current understanding of key interpersonal relationships across the lifespan. Specific

topics include: parent-child relationships, friendships, peer groups, romantic relationships and the role of relationships in specific contexts such as family, school and neighbourhood. Seminar (2 hrs). Winter; W. Craig.

PSYC-878* Research Skills/Program Evaluation
Students are given the opportunity to broaden research skills through practical tasks such as preparing a grant proposal, designing a programme evaluation and critically reviewing research grants and articles. (2½ hrs).

PSYC-899 Master's Thesis Research

PSYC-901* Multilevel Modeling
This course will cover many different techniques involved in multilevel modeling (MLM) including more specialized applications like growth curve modeling and dyadic data analysis (e.g., the Actor-Partner Independence Model). The goal of the course is to familiarize students with the conceptual background and basic procedures of MLM, so they can apply these techniques to their own research. PREREQUISITE: PSYC-802* or equivalent.

PSYC-910* Advanced Assessment
In PSYC-910* principles of psychological test construction, and procedures underlying psychological assessment, with particular emphasis on personality assessment are given advanced treatment. Seminar (2 hrs); Winter; A. Harrison

PSYC-917* Introduction to Cognitive Neuroimaging
This course will acquaint students with current 'best practice' in the use of functional magnetic resonance imaging (fMRI) as a tool to investigate cognitive function. Topics will include experimental design, data processing and analysis, as well as statistical inference and localization. (1.5 hrs.)

PSYC-921* Visual and Auditory Processes
Discusses central problems and selected issues pertaining to vision and audition. Topics will include the anatomy and physiology of the visual and auditory systems, psychophysics, and perceptual processes. Lecture/seminar (2 hrs). Winter; N. Troje

PSYC-930* Somatosensory, Intersensory and Motor Processes
Discusses central problems and selected issues pertaining to the somatosensory system, to the synthesis of information from multiple modalities (e.g., vision, audition, touch), and to the motor system. Topics will include the anatomy and physiology of the somatosensory system and of intersensory integration, psychophysics, perceptual

processes, motor control and planning, and perception and action. Lecture/seminar (2 hrs).

PSYC-931* Neuroplasticity and Behaviour
Changes at the synaptic level in structure and neurochemistry including protein synthesis associated with sensory/perceptual development, learning and memory. Coverage will include in vitro and in vivo approaches. Data from vertebrates and invertebrates will be included. (Normally offered concurrently with BIOL-815*.) Lecture/seminar (2 hrs).

PSYC-934* Comparative Neurocognition
An overview of the evolution and function of cognitive processes. Emphasis will be placed on understanding how natural selection shaped cognition across species.Topics such as memory, decision making and communication will be examined from a behavioural ecology and experimental psychology perspective. Neuroscience and developmental psychology research will complement each topic. Lecture/Seminar (2 hrs.)

PSYC-935* Cognitive Neuropharmacology
An overview of cellular and molecular mechanisms of synaptic transmission that underlie cognitive processing. Specific topics to be covered include drug-induced changes in nervous system function, the uses and actions of various classes of drugs, and the diagnosis and treatment of neuropsychiatric disorders. Lecture/seminar (2hrs.)

PSYC-940* Structural Equation Modelling
Topics include: Data and covariance structure models, estimation, identification, evaluating solutions, model modification and equivalent models, causal versus effects indicators, power, confirmatory factor analysis, multiple groups analysis, latent curve modelling, and multivariate change models. (2 hrs). Winter; L. Fabrigar.

PSYC-941* Research Methods in Social Psychology
Introduction to research methodology. Emphasis is on social psychology. Topics include generating research ideas, research design, questionnaire construction, measurement theory, and professional issues. (2 hrs).

PSYC-942* Cross-Cultural Psychology
A survey of key concepts and theoretical and methodological issues in the field, followed by a critical examination of selected contemporary research areas, including cognition, acculturation and their application. Seminar (2 hrs).

PSYC-944* Attitudes and Attitude Change
Focuses on contemporary issues and controversies in attitude research. Topics include the structure of attitudes, the impact of attitudes on behaviour and cognition, and the psychological processes underlying attitude change. Seminar (2 hrs).

PSYC-945*,946* Special Topics in Social Psychology I, II
Focus on specific issues within the social area. May be offered by visiting scholars or current faculty. Seminar (2 hrs.); Fall; J. Jacobson

PSYC-947* Social Cognition
Examines how people make sense of their social world: How they perceive, represent, interpret, and remember information about themselves and about other individuals and groups. (2 hrs).

PSYC-948* The Self
A survey of theory and research on the self. Topics include: the search for self-knowledge, self-development, self-cognition, self-regulation of behaviour, self-presentation, self-esteem, and the role of the self in psychological health. (2 hrs).

PYSC-951* Advanced Cognitive-Behavioural Therapy
Students will learn advanced skills required for conducting Cognitive Behavioural Therapy in the mood and/or anxiety disorders. A blend of classroom instruction, videotaped therapy sessions, observation, modeling, feedback and supervised practice is used. The specific populations taught in any given year will depend upon the availability of instructors.

PSYC-952* Advanced Clinical Skills
Students will learn advanced skills in interviewing (e.g., diagnostic interviewing, motivational interviewing) and/or intervention (e.g., group therapy, therapy with special populations). A blend of classroom instruction, videotaped therapy sessions, observation, modeling, feedback and supervised practice is used. The specific focus of instruction in any given year will depend upon the availability of instructors.

PSYC-953* Biological Bases of Behaviour
Surveys theoretical and applied aspects of the biological bases of behaviour. Topics covered will normally include basic neuropsychopharmacology and biological treatments of mental disorders, neurological assessment methods (e.g., MRI, fMRI, PET, SPECT), neuropsychological assessment, and the genetic and neuroendocrine bases of mental disorders.

PSYC-957* Advanced Therapy I
Students will learn skills required for conducting therapy using approaches other than Cognitive Behavioural Therapy. (e.g., Interpersonal Psychotherapy for Depression (Klerman model), Systemic Family Therapy). A blend of classroom instruction, videotaped therapy sessions, observation, modeling, feedback and supervised practice is used. The approach taught in any given year will depend upon the availability of instructors. (3 hrs).

PSYC-959*, 960* Special Topics in Development I, II
Focus on specific issues within the development offered by visiting scholars or current faculty.

PSYC-965* Memory, Decision and Choice
A review of contemporary research and theory in cognitive science focussing on selected topics with memory, decision, classification, and choice. Lecture/seminar (2 hrs).

PSYC-968* Health Psychology
These courses explore various problems associated with the areas of health psychology and behavioral medicine. The focus will vary depending on the instructor. Topics may include the relationship between stress and disease, health promotion, psychological management of pain, addictive behaviours, sleep disorders, chronic and terminal illness. (2½ hrs).

PSYC-970*/971* Advanced Special Topics in Cognitive Science I, II
Focus on specific issues within the cognitive science area. May be offered by visiting scholars or current faculty.

PSYC-972* Current Topics in Attention
Each week covers a selected topic in attention research. Topics typically include history of attention research, attentional capacity, spatial and temporal attention, change blindness, inattentional blindness, cortical mechanisms of attention, interaction of attention and memory, and attention training. Seminar; 3 hrs/week.

PSYC-974* Advanced Therapy II
Students will learn skills required for conducting therapy using Cognitive Behavioural Therapy in populations other than mood/anxiety. A blend of classroom instruction, videotaped therapy sessions, observation, modeling, feedback and supervised practice is used. The approach taught in any given year will depend upon the availability of instructors. (3 hrs.)

PSYC-975*, 976* Applied Internship I and II
Students may arrange for one or two terms of supervised applied training outside of the department. Internships will be individually arranged to further the development of each student's program. Student's will submit a list of objectives before the plan is approved, and a report of progress at the end of the term.

PSYC-979* Personality Theory
Examines issues that are the current focus of the personality literature from various theoretical perspectives, including trait, psychodynamic, biological, social cognitive, phenomenological, and other research based perspectives. Seminar (2 hrs).

PSYC-980*,982* Special Topics in Personality I, II
Focus on specific issues within the personality area. May be offered by visiting scholars or current faculty.

PSYC-981* Personality Assessment
Covers the theory and mechanics of psychological test construction and introduces students to major personality tests that are currently predominant in the literature. The objective is to review the psychometric issues relevant to evaluating or developing tests for research purposes. Seminar (2 hrs).

PSYC-987*,988* Advanced Special Topics in Behavioural Neuroscience I, II
Focus on specific issues within the behavioural neuroscience area. May be offered by visiting scholars or current faculty.

PSYC-989*,990* Advanced Clinical Practice
Give students supervised experience in all aspects of clinical practice, including: interview and assessment, treatment, report writing, interprofessional communication and consultation, and professional development. (8 hrs per wk for a total of 120 hrs per course). Fall; Winter; Summer. C. Bowie

PSYC-991*,992* Advanced Clinical Practice
Give students supervised experience in all aspects of clinical practice, including: interview and assessment, treatment, report writing, interprofessional communication and consultation, and professional development. (8 hrs per wk for a total of 120 hrs per course). Fall; Winter; Summer. C. Bowie

PSYC-993 Clinical Internship
Students in the Clinical Program are required to complete a one-year, full-time internship or its equivalent in an approved setting under the primary supervision of a

registered psychologist. This normally will be taken after all course work, comprehensive examinations and Ph.D. thesis are completed. Students who complete all other degree requirements including submission of the final copy of the thesis for binding before starting or during the internship, may apply to change their study status to part-time for the remaining terms of the internship year. Fall; Winter; Summer. C. Bowie

PSYC-994* Special Topics in Clinical Psychology I
Focus on specific issues within the clinical area. May be offered by visiting scholars or current faculty.

PSYC-995* Special Topics in Clinical Psychology II
Focus on specific issues within the clinical area. May be offered by visiting scholars or current faculty.

PSYC-999 Ph.D. Thesis Research

PUBLIC HEALTH SCIENCES

Mandatory M.Sc. Courses offered by the Department
IMPORTANT: Along with other rules regarding mandatory courses, please NOTE that EPID-803* and EPID-806* are mandatory for M.Sc. students who elect to take the Health Services and Policy Research stream.

EPID-801* Introduction to Epidemiology
This course provides foundational knowledge on how human evidence relevant to public health is created, assessed, and used, with a focus on epidemiologic methods. Topics include measures of health status; risk factors and associations with health outcomes; study design including descriptive, analytical, and intervention approaches; validity issues; critical appraisal; assessment of causation; ethics; and application of epidemiologic evidence in public health decisions. Three term-hours. Fall, every year. K. Aronson.

EPID-804* Intermediate Epidemiology
This course deals with advanced methods and issues in the design, conduct, analysis and interpretation of epidemiologic studies. The content focuses on observational study design and analysis, and builds on epidemiologic principles presented in EPID-801. Data analysis will emphasize the application and interpretation of statistical concepts in epidemiologic research. Three term-hours. Winter, every year. W. King.
PREREQUISITE: EPID-801*.

EPID-821* Essentials of Biostatistics
This course provides an overview of basic statistical concepts, principles, and techniques essential for public health and epidemiologic research. This course covers both descriptive and inferential statistics. Topics covered include measures of association, t-tests, regression, chi-square tests, analysis of variance, and some nonparametric methods. Emphasis is on understanding and interpreting fundamental statistical analyses from health research. P. Peng.

EPID-822* Applied Regression Analysis
This course deals with the commonly used regression methods proven useful in health services research and the epidemiologic analysis of the relationship between traits, exposures or treatments, and diseases or other medical outcomes. The course emphasizes the statistical modeling approach with topics including multiple regression, analysis of variance and covariance, reliability of measurements, analysis of categorical data, logistic regression, Poisson regression and survival analysis. This course includes

a compulsory SAS Programming component. Winter, every year. B. Chen, P. Peng. C. O'Callaghan. Tutorial instructors: A. Day, J. Zhang- Salomons
PREREQUISITE: EPID-821* (or permission of instructor for Biostatistics students).

EPID-899 Master's Thesis Research

Mandatory M.Sc. Collaborative Biostatistics Courses

- EPID-801*
- EPID-804*
- MATH-896* (for students registered in Mathematics and Statistics)
- STAT-853* (for students registered in Public Health Sciences)
- STAT-862*
- STAT-886*
- AND

EPID-823* Advanced Methods in Biostatistics
An advanced course in the theoretical issues and analytical practices in epidemiology, and biostatistics. Topics may vary but major topics include analysis of longitudinal and survival data using various regression models; Techniques and strategies for regression modeling; Novel analytic approaches in epidemiology; multivariate analysis methods including discriminant analysis, principal components and factor analysis. Three term-hours. Winter. K. Ding, W. King, D.Tu.
PREREQUISITE: EPID- 821* + knowledge of basic statistical modeling techniques deemed adequate by the Instructors.

EPID-888 Master's Practicum
Under the guidance of the supervisor, students will carry out a practicum project in a health research group/site and practice bio statistical methods and data analysis, or conduct methodology research in a bio statistical project. Students will summarize the results of the project in a written report that will be reviewed and orally defended.

Mandatory M.P.H. Courses Offered by the Department

IMPORTANT: Please NOTE EPID-801, EPID-802, EPID-803, EPID-806, EPID-821, and EPID-827 are all core courses for the 12 month accelerated program.

- EPID-801*
- EPID-821*, AND

EPID-802* Foundations in Public Health

This course provides an overview of theoretical and conceptual foundations of public health. It examines the social determinants of health and population health approaches to promote and protect health. It instils in students an understanding of the historical achievements, core values and ethical frameworks that guide public health action. Three term-hours. Fall. C. Davison.

EPID-803* Public Health System in Canada
This course provides an overview of the public health system in Canada including the provision of health care services. The first section of the course describes how health services are financed, organized and delivered in Canada. The second section of the course shows how finances and legislation influence the development of health policy. Three term-hours. Winter. D. Hunter

EPID-805* Leading Evidence Informed Action
The course teaches students to apply theories of leadership and change to the analysis and development of public health actions. Approaches to leading change are reviewed at a variety of levels - self, team, organization, individuals, community, government. Practical examples are drawn from the core programmatic and functional areas of public health practice and exemplify the role of the local heath unit organization in leading change. Three term –hours. Fall. E. Weir/M.Carter.

EPID-806* Applied Research Methods for Program Planning and Evaluation
This course provides an overview of social research methods and tools to assist students to complete the "evidence to action" program planning and evaluation cycle. Topics covered include: defining the issue,using surveillance data, engaging the community, conducting a stakeholder analysis, survey methods, handling qualitative data, building logic models, choosing indicators, communicating the results, taking action. Three term-hours. Instructor TBD

EPID-886* Public Health Professional Development
This course assists students to lay the foundation for continuing professional development in public health practice. Students are introduced to the personal learning portfolio and coached to chart their progress in developing skills and competencies through a combination of workshops, seminars, and on line learning modules. 1.5 term hours per week. Fall and Winter terms. B. Melles

EPID-887* Practicum Placement
The 400 – hour practicum placement provides MPH students with an opportunity to work in the public health field and contribute to evidence-informed public health practice. Through the practicum students demonstrate and enhance the knowledge,

skills and attitudes they have learned from course work as well as reflect on and advance their career development. Placement activities and roles will vary according to the needs and interests of both host organization and the student. This course is graded on a PASS/FALL basis. Spring /Summer term. Coordinator: E. Weir.

Elective Courses offered by the Department
(NOTE THAT a course listed as core in one of the Department's three Master's programs may be taken as an elective in another of the programs if the student meets the course prerequisites.)

EPID-823*

AND

EPID-807* Health Economics
This course is designed to provide students with an introduction to economic concepts and analysis relevant to health, health care and health care systems. Topics include: health as an economic variable; health production models; uncertainty in health and its effects; the behaviour and influence of various participants (health care providers, patients, government) on health care utilization and health status. No prior economics background is required, although students must have basic quantitative skills. Three term hours. Fall. A. Johnson.

EPID-810* Controlled Clinical Trials
This course will cover material relevant to the design and conduct of controlled clinical trials. Design topics will include methods used to achieve unbiased results with improved precision, such as adequate sample size, randomization, blinding, pre- and post-stratification, cross-over designs, placebos and the counting of relevant events. Attention will be given to the problems of conducting multi-centre clinical trials. Topics covered will include drafting of protocols, design of data forms, logistics of data flow, methods of follow-up, data management and quality control, periodic reporting, final data analysis and the production of final reports. Ethical issues and the role of randomized trials in clinical investigation will be discussed. Three term hours. Winter. H. Richardson/D. Tu.

EPID-815* Independent Study

EPID-817* Foundations of Cancer Control
This course is intended for graduate students, clinical fellows and postdoctoral fellows who are engaged or interested in cancer research. The course will focus on concepts and

methodological issues central to the conduct of epidemiologic studies of cancer etiology and control. Topics will include: an introduction to basic epidemiologic concepts; biologic and clinical concepts central to the investigation of cancer; study design; clinical epidemiology; molecular epidemiology; and cancer control and prevention. Not offered 2018-19.

EPID-819* Introduction to Clinical Epidemiology
This course will demonstrate the way in which epidemiological principles guide the practice of medicine and the design of clinical research. Topics will include how to select the correct design for a study that addresses a clinical question, how to evaluate the quality of clinical publications and research proposals, and how to prepare a clinical research proposal. Not offered 2018-19.
PREREQUISITE EPID-804* or permission of instructor

EPID-828* Infectious Diseases
This course provides an introduction to the principles of infectious disease prevention and control relevant to public health practice. The course focuses on the etiology, history, societal impacts, and determinants of infectious diseases of major public health importance. There is an emphasis on modern prevention and control efforts that can be applied at the local, national and international levels. Not offered 2018-19.

EPID-829* Foundations of Global Health
Students will be exposed to various global health concepts and be trained to work through potential solutions in a public health context. The course will be taught through formal lecture, seminar and small group learning, and online modules. Topics may include: health, public health, and development; Aboriginal health; health systems and policies; Canada's role in global health and social justice; and special populations. Three term hours. Fall. C. Davison

EPID-831* Chronic Disease Epidemiology
This course will provide an overview of the epidemiology of some of the leading non-infectious causes of morbidity and mortality in Canada and will highlight the key methodological considerations for the study of each disease or health problem. Three term hours. Three term hours. Fall. H. Richardson
PREREQUISITES: EPID-801* & EPID-821* or equivalents with permission of course coordinator

EPID-832* Mental Health/Critical Inquiry
This course will provide students with in-depth substantive knowledge about the evolution of health issues that have shaped policy and mental health services. Three

term hours. Winter. H. Stuart.
PREREQUISITES: EPID-801* or permission of course instructor

EPID-833* Issues in Military and Veteran Health Research
Students are exposed to health issues associated with military experience which includes both veterans and military families. As a weekly webinar, the course will include presentations from Canadian subject matter experts who will contextualize military mental and physical health needs and introduce theoretical and methodological approaches to conducting applied health research among this population. Three term hours. Fall. S. Belanger

EPID-835* Environmental Public Health
This course provides students with a foundation for understanding, assessing and mediating environmental exposures. Methods for assessing and communicating about exposures, risks and standards in air, water, soil and food are introduced. Case studies of managing hazardous exposures are reviewed. Environmental health policy implications of global climate, energy use and disaster planning are explored. Three term hours. Not offered 2018-19
PREREQUISITE: EPID-801, EPID-821 or equivalent, or permission of instructor.

EPID-836* Qualitative Research Methods
Qualitative research seeks to understand how and why people perceive and interact with the world around them. This course introduces graduate students to the nature and scope of qualitative research methods with respect to data collection and analyses in the social and health sciences, giving them theoretical and practical foundations to build on.Three term hours. Winter. H. Castleden
EXCLUSION: GPHY-836*

Mandatory Courses offered by the Department for Ph.D. Program

EPID-823*

(NOTE: Ph.D. students who have already completed Advanced Methods in Biostatistics [EPID-823*] as part of their M.Sc. program in Epidemiology at Queen's University may be exempt from this requirement)

AND

EPID-901 Advanced Epidemiology
This course provides in-depth integration of advanced concepts in epidemiology, with theory and examples, including causation and causal inference, study design and

conduct, alternate designs, confounding, effect modification, internal and external validity, misclassification, source populations, statistical power and sample size, epidemiologic data analysis and interpretation, meta-analysis and selected specific research areas. This is an advanced course intended primarily for Ph.D. students. Sessions consist of lectures, seminars, student presentations and discussions. Three term- hours. Fall and Winter terms. Fall term Coordinator: W. Pickett, P. Groome. Winter term Coordinator: K. Aronson, H.Ouellette-Kuntz. .PREREQUISITES: EPID-801*, EPID-804*, EPID-821* and EPID-822* or equivalent from other institutions.

Courses Offered Outside the Department for M.Sc. and M.P.H. programs

Selected graduate courses from other Departments can be taken as electives upon permission of the Department in which the course is offered.

REHABILITATION AND HEALTH LEADERSHIP

Courses listed below represent the range of Rehabilitation and Health Leadership (RHL) graduate course offerings in the School of Rehabilitation Therapy. Not all courses will be offered in each academic year and the current calendar should be consulted for the term and instructor. Course are 3.0 credit-unit 'term' courses unless otherwise specified**.**

RHL-900* Applying Theory to Enable Change
Students will examine key theories of rehabilitation, behaviour change and change management, and the ways that these theories have and can be applied by leaders in rehabilitation and health to facilitate change at the individual, group, organization and system levels. Students will explore the value and process of applying theory to inform rehabilitation leadership practices through case studies, guest lecturers and group work.

RHL-901* Applied Research and Evaluation
Students will learn to design and evaluate complex programs that serve people affected by or at risk of disability across a variety of rehabilitation and health settings. Topics covered will include understanding the context/system, needs assessment, integrating research evidence, methods for summative and process evaluations, data analysis, and using theory to guide evaluation models and knowledge translation.

RHL-902* Leadership Development Seminar
This course will use a combination of on-line synchronous seminars, facilitated discussions, self- and peer evaluations, readings and reflective journaling to build capacity to fulfill leadership roles in rehabilitation and health. Students will examine leadership competency frameworks and theories, and apply this knowledge to build and implement a personal leadership development strategy. (3 credits delivered over two terms)

RHL-903* Communication, Advocacy and Action
In this course, students will earn to strategically plan and prepare communications to advocate for new and existing programs and services influencing people affected by or at risk of disability. Topics will include health literacy, strategic writing, media communications, and understanding systems and political contexts. Overarching themes of ethics, cultural diversity and professionalism are embedded into course discussions.

RHL-904* Preparing Competitive Funding Proposals
Students will develop expertise in preparing different types of funding proposals (e.g., research, philanthropic, community foundation). Students will integrate knowledge related to critical literature review, research methods, strategic communications, and budgeting to prepare competitive funding applications.

RHL-905* Critical Literature Review
Students will learn methods to conduct comprehensive and critical reviews of scientific and gray literature and will become skilled in the critical appraisal of qualitative and quantitative literature. Required for Bachelor's entry students; elective for Master's entry students.

RHL-999 Applied Dissertation
Students will identify a real-world problem in a rehabilitation or health setting, and design, implement and evaluate a process, program or system to address this problem. The dissertation proposal will be publicly defended. The final dissertation will consist a scholarly document that complies with SGS regulations, and includes an appendix that contains a knowledge translation product suitable for distribution to a stakeholder audience.

RHL-906 Emerging Issues in Rehabilitation Seminar *(1 credit)*
This synchronous seminar course will involve readings, on-line presentations by experts on specific emerging issues or controversies relevant to rehabilitation and health leadership, followed by guided critical discussion. Issues addressed with change with each offering.

RHL-907 Emerging Issues in Rehabilitation Seminar *(1 credit)*
This synchronous seminar course will involve readings, on-line presentations by experts on specific emerging issues or controversies relevant to rehabilitation and health leadership, followed by guided critical discussion. Issues addressed with change with each offering.

RHL-908 Emerging Issues in Rehabilitation Seminar *(1 credit)*
This synchronous seminar course will involve readings, on-line presentations by experts on specific emerging issues or controversies relevant to rehabilitation and health leadership, followed by guided critical discussion. Issues addressed with change with each offering.

RHL-910* Research Coordination & Management
This course will prepare students to competently fill the role of research coordinator or

manager in a large multi-project research program. Topics covered include basics of project, budget and human resource management, training and supervising research assistants, preparing ethics applications and monitoring compliance, and tracking and monitoring progress.

RHL-911* Promoting Research in Practice
This course applies leadership practices to the area of facilitating and supporting practice-based research in non-academic settings. Learners will explore methods to incorporate rigor into practice-based research; examine barriers, facilitators and techniques to engage practitioners in research; and scrutinize approaches for building a culture of research in non-academic settings.

RHL-921* Teaching, Learning and Capacity Building
This course will prepare students to develop and evaluate capacity in others through use of teaching and learning strategies, and community capacity building approaches. Students will critically examine theories and evidence about learning in adults, building community capacity, and measuring individual and program level outcomes. Opportunities to practice specific skills will be embedded in course activities.

RHL-922* Coaching and Mentoring
In this course students will examine the theoretical underpinnings, approaches and specific methods for developing practice excellence and leadership in others. Students will learn and practice techniques for coaching and mentoring, and evaluate their appropriateness for motivating diverse individuals.

RHL-930* Ethical Issues in Rehabilitation and Health Leadership
This course will provide an overview of ethical principles and issues facing leaders in rehabilitation and health. Students will examine these principles and issues and debate the challenges of applying them to service planning, provision and evaluation at the individual, group, organization and system levels.

RHL-931* Issues in Diversity, Inclusion and Accommodation
Students will critically examine principles and policies that support adaptation of rehabilitation and health services to meet the needs of diverse populations. Students will consider programs and strategies to promote cultural competence and inclusivity during rehabilitation and health service delivery, as well as programs and strategies that guide equitable hiring practices and disability accommodations in the workplace.

RHL-976* Independent Study
An Independent Study allows a student to work under the guidance of a faculty

member to develop an individualized learning plan to gain specific knowledge and/or skills in a subject area related to the faculty member's area of expertise or special interest, which is not offered through existing courses. The Independent Study must be linked to studies in rehabilitation and health leadership but not directly overlap with the student's applied dissertation work.

REHABILITATION SCIENCES

Courses listed below represent the range of RHBS graduate rehabilitation science course offerings in the School of Rehabilitation Therapy. Not all courses will be offered in each academic year and the current calendar should be consulted for the term and instructor. The Rehabilitation Science program offers 1.5 credit-unit courses as well as 3.0 credit-unit 'term' courses. The 3.0 credit-unit 'term' courses are indicated below by an asterisk.

RHBS-801*/901* Motor Performance in Rehabilitation
This seminar course examines theories of motor control and current literature relating to the neuromuscular, physiological, and biomechanical aspects of volitional movement. Motor performance outcomes will be discussed within the context of physical rehabilitation and motor control. Three term hours. Limited enrollment. Not offered 2018-19.

RHBS-802*/902* Disability and Wellness in the Community
This lecture/seminar course examines the concepts of disablement, community and the social participation of persons with disabilities. Topics include definition, models and evaluation of disablement and social participation; the relationships between people with disabilities and their environments; and current controversial issues in the area of disability, wellness and rehabilitation. Three term hours.Not offered 2018-19..

RHBS-803 Seminar Program for M.Sc. Students
Credit will be based upon attendance and participation in the departmental seminar program as well as sessions addressing specific issues relating to graduate education. In addition, each student will be required to present a seminar based upon his/her research work. (Pass/Fail). Fall and winter terms.

RHBS-804*/904* Rehabilitation Science
This seminar course addresses foundational theory and contemporary issues in rehabilitation science, including research strategies, principles of measurement and ethical issues. Informed by the International Classification of Functioning, Disability and Health, the course highlights policy and research about functioning in people who may use rehabilitation services. Three-term hours; Fall. Limited enrollment.

RHBS-810 Fundamentals of Disability
This lecture/seminar module provides an introduction to disability. The module examines the concepts of disability in a contemporary Canadian and international context. Topics include: definitions, models, history; classification and types of disability, disability prevalence and statistics; disability across the lifespan, including

community and social participation; disability around the world. (1.5 credit units). Please check department for availability.
EXCLUSIONS: RHBS-802*, RHBS-902*

RHBS-811 Advanced Disability Studies
This module examiners complex issues associated with disability in a contemporary Canadian and international context.Topics include: advocacy and disability policy; human rights; research in disability studies; models of service for people with disabilities; issues for people with disabilities (e.g. employment, education, poverty, housing, access). (1.0 credit units). Not offered 2018-19.
PREREQUISITE: RHBS-810 or permission of the instructor.
EXCLUSIONS: RHBS-802*, RHBS-902*

RHBS-812*/912* Program Development and Evaluation
Students will learn to evaluate new and existing programs in both the private and public health care sectors. Topics covered will include needs assessment, analysis of resources, implementation and the ongoing measurement of a program's success.

RHBS-815 Community Based Rehabilitation
This module course prepares students to design, implement and evaluate community based rehabilitation (CBR) initiatives for and with persons with disabilities globally. The historical development of CBR and its philosophical and theoretical underpinnings will be discussed, as will the current international development landscape.(1.5 credit units)
EXCLUSIONS: RHBS-877*, RHBS-977*

RHBS-820 Philosophy of Research
This module introduces the philosophy of research, including the nature and role of world views, systems of logic, and theory in the research process. The implications of this content with respect to the generation of research questions and the selection of research designs, methods, analytic approaches and knowledge translation strategies will be explored. (1.0 credit units). Not offered 2018-19.

RHBS-822 Knowledge Translation
This module examines the foundations of knowledge translation (KT) in health care. Topics include terms, definitions, frameworks and approaches to KT; specific issues related to KT in rehabilitation science; barrier and facilitators to KT; KT interventions and evaluations, and developing KT plans. (1.5 credit units).

RHBS-825 Regression Analysis
Students will gain fundamental knowledge of regression analyses as used in rehabilitation/health research, and practical skills to conduct such analyses.Topics include correlation, basic linear regression, multivariate linear regression, and logistic regression. SPSS, statistical software will be used throughout the course. (1.0 credit units). Not offered 2018-19.
PREREQUISITE: undergraduate statistics.
EXCLUSION: RHBS-834*

RHBS-826 Validation and Reliability Testing
Students will gain fundamental knowledge of validity and reliability testing and practical skills to conduct such analyses. Topics on reliability testing include correlation, coefficients of variation, Intraclass correlation coefficients, Bland Altman Analysis, and Generalizability Theory.SPSS statistical software will be used. (1.0 credit units). Not offered 2018-19.
PREREQUISITE: undergraduate statistics
EXCLUSION: RHBS-834*/ RHBS-934*

RHBS-830* Professionals in Rural Practice: An Interdisciplinary Approach
An examination of the issues related to integrating into rural practice as a professional, including understanding the history and geography of rural communities, and important issues affecting life in rural settings. Selected faculty from the health sciences, theology and education. (Offered jointly with THEO 730*). Three term hours. Limited enrolment. Not offered 2018-19.

RHBS-832* Qualitative Methodology & Methods
An overview of qualitative methodology and methods frequently used in health care research is provided. Topics include, but are not limited to, action research, ethnography, grounded theory, hermeneutics and phenomenology. Methods include focus groups, interviews and participatory observation. Opportunities may exist for interviewing, participatory observation and data analysis. (Cross listed with NURS-802*) 3 hour lecture/seminar. Not offered 2018-19.
EXCLUSION: NURS-802*

RHBS-833*/933* Research Methods I
This course emphasizes the theoretical background in the development of a research proposal for rehabilitation-related research. Topics include development of the research question and problem statement, rationale, appropriate literature review and research design.Three term hours; Fall. Limited enrollment.

RHBS-834*/934* Statistics
A seminar course which will acquaint the student with the concepts and principles of quantitative statistical analysis including parametric and non-parametric methods. Students may present various topics throughout the course and critically evaluate research in their area of study. Three term hours; lectures/seminars. Limited enrollment. Not offered 2018-19.
PREREQUISITE: An undergraduate level statistics course

RHBS-836*/936* Research Methods II
This course guides the student through the process of data collection methods, data analysis and presentation, report/thesis writing and strategies for knowledge dissemination with respect to rehabilitation-related research. Three term hours. Limited enrollment. Not offered 2018-19.
PREREQUISITE: RHBS-833*/933*

RHBS-837*/937* Signal Acquisition and Processing
This is a lecture-seminar-laboratory based course covering the application, instrumentation, acquisition, signal processing and management of electrical signal data as they are used in the study of biomechanics and neuromuscular physiology. Although the principles learned can be applied to many types of motor performance data, there will be an emphasis on electromyography. Laboratory exercises will be used to illustrate key issues related to signal acquisition and processing. Seminar presentations will allow students to investigate and present the application of data acquisition and processing specific to their particular area of interest. Three term hours. Limited enrollment. Not offered 2018-19.
EXCLUSION: KHS-851*, KHS-857*, RHBS-857*/957*, RHBS-835*/935*

RHBS-840 Motor Performance in Rehabilitation
This module examines theories of motor control and current literature relating to the neuromuscular, physiological and biochemical aspects of volitional movement. Motor performance outcomes will be discussed within the context of physical rehabilitation and motor control. (1.0 credit units). Not offered 2018-19.
EXCLUSIONS: RHBS-801*, RHBS-901*

RHBS-841 Instrumentation and Electromyography
Students will learn the fundamentals of electrical signal acquisition, processing and interpretation for biomechanics and neuromuscular physiology applications. Laboratory exercises involving electromyography data acquisition and analysis will be used to illustrate key principles.(1.0 credit units). Not offered 2018-19.

EXCLUSION: KHS-851*, KHS-857*

RHBS-842 Exercise Rehabilitation-Metabolic
The role of exercise as a treatment modality will be examined in two chronic diseases with a metabolic underpinning: renal disease and diabetes. Topics will include the physiological limitations that can be addressed with exercise rehabilitation as well as maintenance of physiological health and wellbeing. (1.0 credit units). Not offered 2018-19.
EXCLUSION: RHBS-873*

RHBS-843 Exercise Rehabilitation-Multifactor
The role of exercise as a treatment modality will be examined in two chronic diseases with a multicomponent underpinning: chronic pain and mental health. Topics will include the physiological limitations that can be addressed with exercise rehabilitation as well as maintenance of physiological health and wellbeing.(1.0 credit units). Not offered 2018-19.
EXCLUSION: RHBS-873*

RHBS-872*/972* Motion Analysis
A theoretical and practical course covering the application, instrumentation and techniques of human motion analysis. Topics include 2D and 3D kinematics, force measurement, link segment analysis and the application of these techniques to able-bodied and disabled populations. To integrate the material, the course combines readings, lectures, laboratories and projects. Three term hours. Limited enrollment. Not offered 2018-19.
EXCLUSION: KHS-859*, KHS-870*, RHBS871*/971*, RHBS-870*/970*

RHBS-873* Exercise Rehabilitation
This seminar-based course provides an overview of the most current guidelines for aerobic and resistance exercise prescription on a global basis in the rehabilitation field. Specific emphasis will be placed on critical evidence-based analysis of exercise recommendations and outcomes for special populations, whether they are healthy or pathological in nature. Three term-hours. Not offered 2018-19.

RHBS-874*/974* Studies in Aging
A lecture/seminar course which examines the neurophysiological, cardiorespiratory, musculoskeletal, cognitive and psycho-emotional aspects of aging and their significance in both motor performance and disability and wellness in the community. Three term hours. Limited enrollment. Contact department for availability.

RHBS-876*/976* Independent Study
A study under the guidance of a faculty member in a subject area related to the faculty member's area of expertise or special interest that is not covered within existing courses. The study work must not directly overlap with the student's thesis work. Normally this course will take the form of a closely supervised reading program, but may also include supervised laboratory work and/or specialized clinical experience. A course outline should be developed in consultation with the student's supervisor and the proposed instructor. The course outline must be approved by the Chair of the Graduate Program in Rehabilitation Science prior to the student registering in this course. Fall, winter, or summer.

RHBS-877*/977* Community-Based Rehabilitation
This course prepares students to design, develop, implement and evaluate community based rehabilitation (CBR) programs for and with persons with disabilities internationally. Topics addressed include CBR history, concepts, and frameworks; relevant policy and global development agreements; education and training strategies in CBR; emancipatory and participatory approaches to research and evaluation; and the World Health Organization's CBR matrix and its application to CBR practice, research and education. Not offered 2018-19.

RHBS-880*/980* International Health
This course provides an overview of the major current issues in International Health. The epidemiology and prevention of the major causes of morbidity and mortality will be discussed as will the organization, management, and cost evaluation of health care resources. Three term hours. Not offered 2018-19.

RHBS-899 Master's Thesis Research

RHBS-903 Seminar Program for Ph.D. Students
This course requires attendance and participation in the departmental seminar series throughout each student's program. Each doctoral student is required to present and preside over a minimum of 2 journal club presentations normally in the first two years of their program. In addition, each doctoral student will present a seminar on current issues, concepts or advanced topics in his/her area of specialization, and will provide two lectures related to his/her area of expertise in an appropriate entry level course at some point during their program. Prior to graduation, students will present their research findings in the seminar series. Assessment will be based on satisfactory completion of all course requirements (Pass/Fail). Fall and winter terms.

RHBS-921 Grant Writing for Rehabilitation Scientists
This seminar course is designed to assist trainees who are working on their research/thesis proposal to hone their grantsmanship skills. Students will work with their research proposal to prepare it for submission to a major granting council and will present it to the class for review and critique. (1.5 credit units). Limited enrollment. PREREQUISITE: [RHBS 904 and RHBS 933] or permission of the instructor

RHBS-932* Qualitative Research Methods in Health Studies
This course prepares student to evaluate and undertake health related research using qualitative approaches. Topics addressed include the philosophical foundations of qualitative research, research design and rigor, data collection, analysis and interpretation and ethical challenges. Three term hours; lectures/seminars. Limited enrollment.

RHBS-999 Ph.D. Thesis Research

RELIGIOUS STUDIES

Course Descriptions
Not all the courses listed below will be offered in any given year. Applicants should consult the Department about the courses to be offered. 3.0 credit unit courses (half-courses) are denoted by an asterisk (*). 6.0 credit unit courses (full courses) have no asterisk.

Required Courses

RELS-801* Core Course I: Religion and Modernity
Examines the nature of religious transition in response to various pressures for religious change.

RELS-802* Core Course II: Theory and Method in Religious Studies
Looks at recent articulations and applications of theories and methods in Religious Studies.

RELS-898 Master's Essay
A research essay. The Master's Essay must demonstrate appropriate competence in the application of theoretical and methodological approaches to a suitable research topic in the study of religion. The Master's Essay will not be subject to an oral defence but will normally be read by one member of the department in addition to the essay supervisor.

Elective Courses

Two of these courses will be offered each year.

RELS-808* Readings in Religion I
Advanced seminar providing detailed reading of one contemporary theme or thinker in Religious Studies.

RELS-809* Readings in Religion II
Advanced seminar providing detailed reading of one contemporary theme or thinker in Religious Studies.

RELS-884* Feminist Studies and Religious Studies
Examination of feminist theory and its application to the study of religion.

RELS-885* Religious Fundamentalisms
Explores theoretical aspects of religious fundamentalisms as a response to modernity, as well as specific case studies.

RELS-886* Religion, Nature and Technology
Examines the connections between the secularization of religion, the disenchantment of nature, and the rise of technology in the modern period.

RELS-887* Problems in Ancient Mediterranean Religions
An interdisciplinary study of the religions and mythical traditions of Mediterranean and Near Eastern cultures from the Bronze Age to Late Antiquity. Topics will vary according to instructor. The course will have special regard for, but not be limited to, the Levant, and the Greek and Roman world.

Reading Courses

These courses will be offered concurrently with a linked undergraduate course. A maximum of 1.0 courses (6 credit units) from this list is permitted for the M.A.

M.A. students will be required to attend classes with the undergraduate students but will have separate course requirements including additional readings and different assignments. They will also meet with the instructor on occasion separately from the undergraduate students.

RELS 806* Directed Special Studies 1
Advanced seminar providing detailed reading in one contemporary theme or thinker in Religious Studies.

RELS-807* Directed Special Studies 2
Advanced seminar providing detailed reading in one contemporary theme or thinker in Religious Studies.

RELS-810* Modern and Contemporary Christian Thought
Exemplary work in recent and contemporary Christian theology.

RELS-811* Jesus: The Continuing Historical Quest
This course provides an introduction to the methods and premises used in the modern quest to understand the historical facts of Jesus life. Particular attention will be given to understanding the historical Jesus in his first-century socio-cultural context. Offered jointly with RELS-311*.

RELS-812* Christian Feminist Theology
Issues raised by the feminist critique of traditional Christian theology and feminist attempts at theological reconstruction.

RELS-821* Greek and Roman Religions
A study of the development and organization of non-civic religious associations in the Greek and Roman empires using inscriptions, papyri, and literary texts. Insight into religious practices of the Greco-Roman period comes through exploration of groups organized by deity, cult, occupation, or ethnic identity, and the so-called mystery religions.

RELS-822* Yoga in India and the West
Surveys the history and philosophy of yoga in India and the West. Yoga practicum: estimated cost $85.00

RELS-824* Body, Mind and Spirit in Chinese Culture
Chinese cultural views of the body, mind and spirit and the connections between traditional Chinese medicine, philosophy and religion.

RELS-826* Religion and Politics in Muslim Societies
Explores the role of religion in the politics of Muslim societies with particular attention to the modern period.

RELS-827* Indigenous Traditions in North America
Introduction to the study of Indigenous traditions in North America.

RELS-828* Interpretation of Apocalyptic Literature
The primary focus of the course will be the theological perspectives and social functions of apocalyptic in select religious traditions. The course will also survey the appropriation of apocalyptic themes throughout history in artistic forms such as art, fiction, and film, with particular attention to our modern times and cultures. Offered jointly with RELS-328*.

RELS-831* Religion and Violence
Links between violence and religious beliefs, practices, and institutions; for example, sacrifice, holy wars, scapegoating, and suicide.

RELS-834* Jewish Views of the Other
A study of the tensions that come into play as Jews formulated views of the Other to balance co-existence with them. Source materials include authoritative writings of Jewish commentary and law and social scientific views of them.

RELS-840* Religion and Democracy
Deals with the role of religion in the public sphere and its relation to liberal democracy. It examines the (in)compatibility of some tenets of certain religions with modern democratic principles.

RELS-841* Spirituality, Secularity, and Nonreligion
A study of concepts intended to summarize positions which are necessarily defined in reference to religion but considered to be other than religious. We explore the origins and presence of perspectives and experiences including the secular, spiritual –but-not-religious, atheistic, and other forms of imitation, indifference, and hostility to religion.

RELS-852* The Contemporary Religious Situation
Religion in modernity; traditional groups, newer religious movements, contemporary ideologies and social trends of religious significance. Offered jointly with RELS-452*.

RELS-854* Theory in Religious Studies
An introduction to major theoretical approaches to the study of religion. Offered jointly with RELS-354*.

RELS-893* Buddhism in the Modern World
Encounter between Buddhism and the West, major movements and thinkers, and socio-politically engaged Buddhism.

RELS-894* Religion and Politics in Contemporary China
Examines Chinese and foreign religions in mainland China from 1949 to the present day. Topics include the status of established religions, the political control of new religious movements and the resurgence of traditional Chinese religion and ideologies including Daoism and Confucianism.

RELS-896* Islam in the Modern World
Exploration of Islamic developments since the 19th century: major thinkers, trends of thought, and contemporary movements as responses to modernity.

RELS-897* Judaism in the Modern Age
The development of modern Jewish religious thought and practice, including the Reform, Orthodox, Conservative and Reconstructionist movements. The consequences of the Holocaust and the establishment of the modern state of Israel.

SOCIOLOGY

Seminar Courses

SOCY-881*,891*,892*,893*,894*,895*,896*,897* Directed Special Studies
Courses arranged especially for those whose interests are not met by other courses.

SOCY-898 Master's Essay Research
Required in Program ii.

SOCY-899 Master's Thesis Research
Required in Program i.

SOCY-900* Professional and Pedagogical Skills
This course is designed to acquaint doctoral students with some aspects of the teaching and research responsibilities of a sociologist and faculty member. It has both theoretical and practical components, and will cover course planning, presentation and preparation as well as planning, organizing, funding and publishing research. Grading is on a Pass/Fail basis. Course is compulsory for doctoral students and is offered every other year. Three term hours. Not offered 2018-19.

SOCY-901* Sociological Theory
Core Course: All M.A. and Ph.D. students will normally be required to take this course. Ph.D. students who have already taken the course shall choose an appropriate replacement in consultation with the Graduate Coordinator. This course critically examines the main tenets of contemporary sociological theory. Key sociological concepts are studied in a variety of contexts spanning from the micro to macro levels of social action. Although heavily reliant on the main historical developments in sociology (Marx, Weber and Durkheim), emphasis is place on post Second World War II developments in sociological theory. Three term-hours. Fall; A. Burfoot.

SOCY-902* Sociological Methodology
All M.A. and Ph.D. students will normally be required to take this course. Ph.D. students who have already taken the course shall choose an appropriate replacement in consultation with the Graduate Coordinator. This course deals with the main contemporary methodological approaches to the explanation of social phenomena. It will critically examine the strengths and weaknesses of the major strategies of social research (qualitative, quantitative and historical). The selection of specific problems areas may vary from year to year. Three term-hours. Winter; V. Sytsma

SOCY-903* Surveillance Studies
Surveillance is sociologically significant as a central means of governance. Surveillance is both a cultural and technical invention, especially dependent today on digital infrastructures and neo-liberal policy. Personal data are gathered by many means and processed to create categories by which risks and opportunities are assessed, and through which people's life-chances and choices are influenced and managed.Three term-hours. Fall; D. Lyon

SOCY-911* Contemporary Sociological Theory
This course enables an advanced engagement with contemporary sociology. It will focus on recent developments in sociological theorizing, directing these toward specific problem areas. The precise topics will vary from year to year in response to instructor expertise, student interest and need. Not offered 2018-19.

SOCY-916* Qualitative Methodology

SOCY-917* Quantitative Methodology
This course serves as an introduction to a broad range of quantitative methods typically employed in the Social Sciences in a manner suitable for students at the graduate-level. Students will learn to prepare data for analysis, carry out analyses, and interpret research results using a variety of statistical techniques. Students will be acquainted with the assumptions that are made while employing various methods, as well as the problems that arise with the use of such methods. Not offered 2018-19.

SOCY-918* Current Developments in Socio-Legal Theory
This course will focus upon a variety of macro, middle and micro level theories in the socio-legal area. The emphasis will be on historical and comparative critical analysis and evaluation using appropriate empirical evidence and studies. Not offered 2018-19.

SOCY-919* Current Developments in Socio-Legal Methodology

SOCY-920* Advanced Issues in Socio-Legal Studies
This course will examine issues and controversies in the socio-legal area. Topics will vary, but may include some or all of the following: corporate crime, victimology, crime and the elderly, feminist criminology. Three term-hours. Winter; S. Baron.

SOCY-921* The Social Construction of Science and Technology
The evolution of science and technology is neither linear nor cumulative. By drawing upon theories of sociology of science and technology, the course argues through the use

of case studies that, like other forms of knowledge, scientific and technical knowledge is socially constructed and is embedded in general social relations. Not offered 2018-19.

SOCY-925* Feminist Sociological Theory
This course deals with feminist critiques of sociological theories, how such theories have been revised and appropriated by feminists and the various perspectives that feminists have developed for interrogating and transforming social hierarchies informed inter alia by gender, class, racism, and heterosexism. Three term-hours. Not offered 2018-19.

SOCY-931* New Media Cultures
We live in cultures which are increasingly organized around or saturated with digital information or new media. In this advanced course we will engage with some of the major commentators on relationships between new media and culture, working through a series of key ideas and problems focused around intersections of theory and practice. Instead of maintaining a domination/resistance conception of cultural industries and practices, we will explore complex dynamics of innovation and consumption across a variety of arenas. There will be scope to engage with notions of mobility, speed, reflection, reflexivity, information, virtuality, consumption, in the context of different spaces or objects (city; home; archive; gallery; brand, memory, sounds, visions, events, body, etc.) and practices (photography, art, writing, listening, tourism, learning, etc.) which exemplify contemporary debates about new media in cultural sociology. Three term-hours. Winter; M. Hand.

SOCY-932* Transnational Theories of Race, Gender and Sexuality
This course is designed for graduate students interested in questions surrounding the construction and perpetuation of categories of social difference. It explores current theories of concerning social relations of race, gender, ethnicity, sexuality, class and other dimensions of difference, and the ways in which these social relations are intersecting and interlocking. The aim of this course is to bring an intersectional analysis to contemporary social concerns, but also to ground that analysis historically. These questions are addressed through a range of theoretical approaches, including critical race theory, transnational feminism, anti-racist feminism, anti-racist theory, postcolonial theory and queer theory. Not offered 2018-19.

SOCY-934* Special Topics
This course explores a range of special topics in the area of surveillance, critical big data studies, and/or digital media. Topics vary from year to year. See the Departmental Graduate Studies website for details.

SOCY-935* Special Topics
This course explores a range of special topics in the area of criminology or sociolegal studies. Topics vary from year to year. See the Departmental Graduate Studies website for details.

SOCY-936* Special Topics
This course explores a range of special topics in the area of power, inequality and social justice. Topics vary from year to year. See the Departmental Graduate Studies website for details.

SOCY-999 Ph.D. Thesis Research

Courses in Related Fields

Students may arrange to take certain courses in other fields of graduate study in the University, such as Geography, History, Law, Political Studies, etc. Students wishing to make such arrangements should consult the Coordinator of Graduate Studies in the Department of Sociology and the Coordinator of Graduate Studies in the department concerned.

TRANSLATIONAL MEDICINE

TMED-800* Translational Medicine
Students will be educated in the translation of medical knowledge from a variety of medical disciplines. Classroom sessions will be divided into a traditional lecture, followed by an interactive discussion and a 3-minute student presentation. Clinical observerships will involve direct placement within various clinics. Students will be expected to write a review article on the topic of their thesis research.

TMED-801* Profession of Medicine
This course will immerse students in the professional learning environment of Medicine. Course content will consist of attendance at a minimum number of weekly Medical Grand Rounds, followed by facilitated small group discussions. Student seminars will be held during the winter term for presentation of thesis research proposals.

TMED-802* Research Success Skills
This course will provide the students with essential skills required to be a successful researcher.

Instruction on study design, ethical and regulatory requirements for biomedical researchers will be provided through completion of online modules. A Library session will be included to teach strategies to search biomedical literature. Students will be expected to write a CIHR Canada Graduate Scholarship application and laboratory/research skills related to their thesis research will be evaluated.

TMED-811 Next Generation Sequencing
This course will teach students the theoretical and practical basis of high-throughput genomics and transcriptomics. The course is a combination of classroom lectures, practical bench science and practical computing. Students will learn to design, implement and analyze an experiment using next generation sequencing technology and be expected to demonstrate these skills in the course assignments. (1.0 credit units)

TMED-899 Master's Thesis Research

TMED-999 Ph.D. Thesis Research

URBAN AND REGIONAL PLANNING

Core courses are indicated by a (†) in the list below.

Please confirm with the School for availability of courses for the current year. SURP-800-SURP-810, 830, 831 Planning Methods (Note: each course weight is 1.0 credit units). Techniques commonly used in planning practice will be presented in four-week modules.Students are required to take three modules, of which one must be SURP-800 if the student takes the report or thesis option, and the sum of the three is the equivalent of a half-course (3.0 credit units). Students may take six modules, using an extra three as credit for one of their electives. At least three modules are offered each year. Special topics may be covered depending on student and faculty interest. The modules are:

SURP-800* Master's Research Proposal
Students work with thesis/project supervisors to prepare a detailed Master's thesis/report proposal. The proposal should include a well-defined research question, appropriate method(s), and a tentative project schedule. The proposal should be grounded in relevant literature and must include an annotated bibliography in support of the topic. Course evaluation is Pass/Fail. 1.0 credit units; Fall.
PREREQUISITE: Completion of first year of Master's studies and permission of the instructor.
COREQUISITE: SURP-898 or SURP-899

SURP-801 Survey Research Methods
1.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-802 Advanced Qualitative Methods
1.0 credit units; Fall. L. Viswanathan.
PREREQUISITE: Permission of instructor.

SURP-803 Employment Analysis
1.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-804 Implementation
1.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-805 Negotiation
1.0 credit units. Not offered 2018-19. Learning materials approx. $24.
PREREQUISITE: Permission of Instructor.

SURP-806 Population Forecasting
1.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-807 Special Topic
1.0 credit units; Winter. S. Cumming. Topic "Participation Techniques".
PREREQUISITE: Permission of Instructor.

SURP-808 Special Topic
1.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-809 Special Topic
1.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-810 Special Topic
1.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

†SURP-812* Qualitative Methods in Planning
This course is an introduction to various qualitative research methods used in planning. Theoretical and ethical issues regarding qualitative research methods are also discussed. Students will have opportunities to critically explore the development of a planning project from posing a research question through to the presentation of findings. 3.0 credit units; Winter. L. Viswanathan.
PREREQUISITE: Permission of Instructor.

†SURP-814* Foundations in Contemporary Planning
This foundational course will introduce the three areas of concentration in the MPL degree. It will also introduce concepts of environmental, economic and social sustainability as they relate to practices of planning for human settlements. Learning materials for field trip expenses up to $200.00. 3.0 credit units; Fall. P. Collins, D. Gordon, J. Meligrana.
PREREQUISITE: Permission of Instructor.

†SURP-815* Legal and Governmental Processes
This course examines the relationships among planning processes and their legal, governmental and administrative contexts. Matters considered include the meaning and sources of law, the Canadian constitution, division of powers, the organization of government into legislative, executive and judicial branches, judicial review and governmental action, and the role of municipal government. From this context arise issues of power, the roles of the planner, the relationships between and among planners, citizens, elected officials and bureaucracy, and the processes and institutions of policy-making. 3.0 credit units; Winter. J. Meligrana.
PREREQUISITE: Permission of Instructor.

SURP-816* Land Use Law
An intensive study of the Planning Act of Ontario including a close examination of the evolution of the Act, its purposes and its interpretation by the courts. The Act is considered for its effectiveness in providing a legal basis for controlling the use of land as a means of achieving community planning goals. Comparative approaches are also considered as a means of identifying inadequacies in Ontario law. A central issue in the course is the matter of insuring a high degree of justice and fairness among the interested parties in the resolution of land use control conflicts. 3.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

†SURP-817* An Intellectual History of Urban and Regional Planning
This course will provide a thematic history of major ideas informing the planning of built, social, and ecological environments of communities, cities, and regions. The ideas and concepts promoted by theorists and practitioners from around the world will be introduced. The emergence and application of these ideas in Canadian planning practice will be emphasized. Learning materials for field trip expenses up to $200.00. 3.0 credit units; Fall. D. Gordon.
PREREQUISITE: Permission of Instructor.

†SURP-818* Physical Planning
An introduction to physical planning approaches, methods and techniques. The course examines how physical design relates to urban and regional planning. Students will be introduced to topics which include site and building survey and analysis, built and natural environment survey and analysis, design interpretation of planning and other regulations, visual analysis, costing, choice of design alternatives, urban and regional plans, etc. Development of graphic skills in analysis and presentation will be emphasized. Learning materials approx. $50. 3.0 credit units; Fall. A. Agarwal.
PREREQUISITE: Permission of Instructor.

†SURP-819* Quantitative Methods
This course introduces students to basic methods of quantitative analysis used by urban and regional planners. It introduces methods for exploring and presenting data, analyzing relationships between variables and testing hypotheses. Students will also become familiar with statistical software. Learning materials approx. $80. 3.0 credit units; Winter. P. Collins.
PREREQUISITE: Permission of Instructor.

†SURP-823- 827 Planning Projects
Groups of planning students work on projects, often connected with clients from the public or private sectors. Projects vary from year to year but all require a rigorous application of skills of problem and goal definition, generation of solutions, evaluation of alternative means of achieving goals, and presentation of results. An emphasis on processes of group work, communication skills, and project organization supplements the substantive, issue-oriented work particular to a given project. One of these courses must be taken by every student. (6.0 credit units). PREREQUISITE: Permission of Instructor.

†SURP-823 Health & Social Project
Project Course (Health- and social-oriented). Learning materials: $100-$200, depending upon funding, for transportation and course materials. 6.0 credit units; Fall. P. Collins.
PREREQUISITE: Permission of Instructor.

†SURP-824 Land Use & Real Estate Project
Project Course (Physical-oriented). Learning Materials: $100-$200, depending upon funding, for transportation and course materials. 6.0 credit units; Fall. D. Gordon.
PREREQUISITE: Permission of Instructor.

†SURP-825 Environmental Services Project
Project Course (Environmental-oriented). Learning Materials: $100-$200, depending upon funding, for transportation and course materials. 6.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

†SURP-826 Special Field Project
Learning Materials: $100-$200, depending upon funding for transportation and course materials. 6.0 credit units; Fall. J. Meligrana.
PREREQUISITE: Permission of Instructor.

†SURP-827 International Planning Project
Learning Materials and fees approximately $500-$1,000, plus transportation and living expenses. 6.0 credit units.Fall. A. Agarwal.
PREREQUISITE: Permission of Instructor.

SURP-830 Affordable Housing
This module provides an overview of programs and policies for affordable housing in Canada. It discusses current approaches to affordable housing and homelessness in a local planning context as well as the redevelopment of existing social housing. 1.0 credit units; (four-week course module). Fall. P. Streich.
PREREQUISITE: Permission of Instructor.

SURP-831 International Urban Planning
This course will introduce students to the urban issues and planning processes/methods in non-Western countries, with special emphasis on their cultural contexts. Each module will focus on a particular country. These may include, but are not limited to China, India, Indonesia, and other Asia-Pacific countries. 1.0 credit units (four-week course module). Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-840* Land Use Planning
Survey of theories and concepts in land-use planning at both urban and regional scale; examination of institutional framework and practice; formats and contents of plans; land-use principles and standards; and instruments for implementation. Learning materials plus lab fees: approx. $140.00 3.0 credit units; Winter. T. Gkotsis.
PREREQUISITE: Permission of Instructor.

SURP-841* Real Estate Decision Making
This course is an introduction to the concepts, planning principles and analytical methods involved in making key decisions regarding commercial real estate. Designed to complement SURP-844*, the emphasis is on evaluating the investment merits of large, existing income-generating properties spanning key asset classes. Teaching methods include case studies, group exercises, guest speakers from industry and student analysis of real properties. Learning materials approx. $30. 3.0 credit units; Fall. J. Andrew.
PREREQUISITE: Permission of Instructor.

SURP-842* Economics of Land Development and Planning
This course examines the forces that shape cities. It examines the factors that determine land value and land uses. It presents models of urban spatial structure and discusses

issues in land development, planning and taxation. 3.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-844* Real Estate Planning and Development
This course examines real estate market research, project planning finance and development techniques. Residential, retail and office market analysis and development are studied through lectures and case study discussions. Learning materials approx. $30. 3.0 credit units. Not offered 2018-19.
REREQUISITE: Permission of Instructor.

SURP-848* Community Design
This course examines analytic techniques and design approaches used in physical planning (topography, activity, circulation, etc.). The application of these techniques and methods will be demonstrated through specific community design projects such as subdivision design, re-zoning and visual images. 3.0 credit units. Not offered 2018-19.
PREREQUISITE or COREQUISITE: SURP-840 and Permission of Instructor.

SURP-849* Public-Private Partnerships for Urban Redevelopment
This course examines how the public and non-profit sectors can implement projects in an era of abruptly reduced funding from taxpayers. It considers redevelopment of public lands by requests for proposals by private developers. Case studies and group projects are set in waterfronts, downtowns and suburbs of North American and European cities. 3.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-851* Environmental Policy
This course will examine environmental policies in urban and regional contexts. Tools used by policy makers (e.g. risk assessment and management, quality indices, evaluation, impact assessment, mitigation and compensation) and the constraints they encounter (e.g. uncertainty, legal and administrative constraints and financial costs) will be reviewed. Substantive areas to be examined will be focused on the relationship between the built environment and the quality of air and water as well as the use of land resources. Specific cases will vary from year to year. The scope of policies and readings will range from local to global; integration will be stressed. 3.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-853* Environmental Services
This course will focus on the relationships between environmental services and quality

of life in cities and regions. It includes a critical examination of the development, delivery and evaluation of environmental technologies and services. There is an emphasis on water, open space, and solid waste. Case studies and field trips will supplement a lecture/seminar format. 3.0 credit units; Winter. J. Meligrana.
PREREQUISITE: Permission of Instructor.

SURP-855* Environmental Planning and Management
This course examines planning and management issues and tools in environmental services, such as inventory management, needs assessment, demand management, and investment decisions. The emphasis is on planning, management and financing options and their relationship to land use and urban form. 3.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-856* Environmental Assessment
This course will explore the theoretical and practical aspects of environmental assessment processes. The focus will be on project level environmental assessment including biophysical, social and cumulative effects assessment along with public consultation.3.0 credit units; Winter. G. Whitelaw.
PREREQUISITE: Permission of instructor.

SURP-858* Heritage Conservation
Concepts and issues of heritage conservation, together with policies and strategies for achieving a balanced heritage conservation program are discussed. Methods for identification of heritage buildings and techniques for preservation and restoration will be explored. 3.0 credit units; Fall. C. Bray.
PREREQUISITE: Permission of Instructor.

SURP-861* Healthy Community Planning
This course will introduce students to links between urban planning and public health, with a focus on the North American context. Various dimensions of communities and cities, such as urban form and sprawl, transportation, community design, and housing, will be interrogated for their health-promoting and impeding qualities, while students will gain important skills in planning for healthy communities. 3.0 credit units ; Winter. P. Collins.
PREREQUISITE: Permission of Instructor.

SURP-865* Urban Transportation and Health
This course provides an understanding of the association between urban transportation, environment, and public health. Emphasis will be placed on the role of the built environment in shaping travel behaviour and its subsequent impact on environment

and health outcomes. The course also examines planning and policy interventions to address the key issues. 3.0 credit units; Winter. A. Agarwal.
PREREQUISITE: Permission of Instructor.

SURP-866* Urban Transportation Policy
This course is an introduction to key planning and policy issues in urban transportation. Urban transportation is examined in the context of general economic, social and spatial trends. The course provides some understanding of the nature of the urban transportation problem, and why transportation problems are so difficult to solve. 3.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-870* Health and Social Planning
This course is a foundation course in health and social planning. Within the context of community planning, topics are drawn from international scholarly research, planning theory, and practice-based interventions in public health, human service delivery, program management, policy studies, housing, and community development. 3.0 credit units; Winter. L. Viswanathan.
PREREQUISITE: Permission of Instructor.

SURP-871* Social Planning
This course focuses on social policies and programs relating to the provision of housing and human services within the broad scope of urban and regional planning. The quality of life in cities and regions as influenced by land use policies, community design as well as service strategies will be analyzed. Public policies and programs will be examined in the perspective of meeting needs of divergent populations identified by attributes such as class, race, gender and culture. Public, private and community-based modes of service delivery will be reviewed both in Canadian and comparative perspectives. Specific topics in the course will vary from year to year. 3.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-874* Housing Policy
This course assesses housing policy options and the contributions planners can make to the supply of affordable, adequate and appropriate housing. It presents the many factors influencing the housing market and analyzes public and private initiatives affecting the provision of housing. It shows the interdependence between housing and social service planning and analyzes issues regarding the choices among housing and other social policies. Current policies targeted at specific groups in need of assistance

will be reviewed. 3.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-875* Community Practicum in Service Delivery
This course is meant to develop an understanding of policy and program delivery mechanisms for community services. The focus of the course is on how individuals and communities as clients of these programs experience their effects. The course will be structured around individualized field placements in public and non-profit agencies. The observations and experiences of the field assignment in concert with faculty supervision will be the primary mode of learning in this course. 3.0 credit units. (Offered contingent upon finding an appropriate supervisor).
PREREQUISITE: at least two related graduate courses or equivalent and permission of Instructor.

SURP-881* GIS in Urban Planning
This course is provided for students with little or no prior knowledge of GIS software. It will explore the basic concepts and techniques of GIS software required to create effective maps for urban planning purposes. Specific components include: how to interpret graphic and tabular data, geocoding, using queries and browsing, displaying maps, creating thematic maps and editing attribute and graphical data. Learning Materials: approx. $140 3.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor

SURP-882* Land Development and Planning Using Computer Aided Design Software
This course will explore the principles of land development and planning by using computer aided design software. The application of computer aided design software for graphic presentation and analysis of regional plans, subdivisions and a variety of other planning exercises is the primary goal of this course. Learning materials plus lab fees approx. $130. 3.0 credit units; Fall. S. Agarwal.
PREREQUISITE: Permission of Instructor.

SURP-883* Planning Practices in the Third World: Lessons for North America
A critical examination of urban and regional development efforts in selected developing countries through case studies. The course will have a comparative perspective and it will attempt to identify transferable experience from various developing to developed countries, particularly bearing on problems of economically poor and ethnically distinct regions. The emphasis will be on exploring assumptions, contents and implementation of various planning strategies with the objective of finding out the conditions necessary for successful planning. Special attention will be given to the planning approaches

employed in dealing with problems of urban growth, infrastructure developments, housing, land markets, and regional inequalities. 3.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-890* Topics in Research Methods
Critical review of research methods and strategies applicable to specific topics in planning and policy making. The choice of fields or topics will be determined by the student's interests. Case studies of research strategies in similar projects will be carried out. Students will prepare a research design related to their master's thesis or report. 3.0 credit units. Not offered 2018-19.
PREREQUISITE: Permission of Instructor.

SURP-891*/892* Directed Study in Advanced Aspects of Urban and Regional Planning
3.0 credit units. (Offered contingent upon finding an appropriate supervisor.)
PREREQUISITE: Permission of Instructor.

SURP-893* Internship
This non-credit course allows students to combine their formal academic studies with on-the-job experience, normally through a four-month placement with a government department or other organization. The internship is scheduled following a student's completion of at least two terms of academic study and is open only to students registered in the M.PL. full-time program. 0.0 credit units.
PREREQUISITE: Permission of Instructor.

SURP-898 Master's Report
6.0 credit units.
PREREQUISITE: Permission of instructor.
COREQUISITE: SURP-800 Master's Research Proposal.

SURP-899 Master's Thesis
12.0 credit units.
PREREQUISITE: Permission of instructor.
COREQUISITE: SURP-800 Master's Research Proposal.

OTHER ELECTIVES
The School offers instruction in the following courses on the basis of student interest. Students are encouraged to approach the Director or another faculty member if they wish any of these courses to be made available. Instruction may be in the form of individual tutorials or seminars, depending on the number of interested students.

SURP-884* Functional Planning
3.0 credit units.
PREREQUISITE: Permission of Instructor.

SURP-886* Functional Planning
3.0 credit units.
PREREQUISITE: Permission of Instructor.

SURP-887* Functional Planning
3.0 credit units.
PREREQUISITE: Permission of Instructor.

SURP-888* Advanced Social Planning and Programming
3.0 credit units.
PREREQUISITE: Permission of Instructor.

SURP-889* Advanced Seminar in Regional Policy Analysis
3.0 credit units.
PREREQUISITE: Permission of Instructor.

GENERAL REGULATIONS

The School of Graduate Studies is committed to upholding the values of equity and diversity and the principles of fairness and inclusiveness. Our policies, regulations and practices are developed and implemented to achieve educational equity. Should you have questions please contact the School of Graduate Studies.

ADDITIONAL LANGUAGE REQUIREMENT

Some departments/programs may require students, particularly those in doctoral programs, to obtain a reading knowledge of one or two languages other than English, in which there may be a significant amount of reference material related to the chosen field of graduate study. This requirement must be fulfilled to the satisfaction of the Department/Program at least one year prior to submission of the student's thesis. A statement from the Head of the Department/Program that the language requirement has been completed must be sent to the School of Graduate Studies.

ANNUAL PROGRESS REPORTS

To be in good academic standing, a student registered in a degree program[1] in the School of Graduate Studies (SGS) must make continuous, satisfactory progress toward the completion of the degree, as well as comply with the General Regulations of the SGS, all departmental/program requirements governing that degree program, and any and all applicable university regulations.

In research-based graduate programs, progress is facilitated through the completion and submission of an Annual Progress Report, and for doctoral students it is a requirement of the Queen's University Quality Assurance Processes.

All doctoral students are required to submit an Annual Progress Report and graduate departments/programs are required to have a process to provide written feedback to each student. Every doctoral student is responsible for submitting a written report at least once per year to the supervisor, and/or if applicable the supervisory committee, detailing his or her progress since the last report, and the plan/objectives for the next year. The supervisor and/or supervisory committee provide feedback on the student's progress and comment as to whether the proposed plan/objectives are reasonable and compatible with timely degree completion. This is also an opportunity to outline how any unanticipated delays in progress can be addressed. The student must be given the

opportunity to respond to the supervisor's and/or supervisory committee's comments, and all parties must sign the report prior to its submission to the Graduate Coordinator (or delegate) by the annual deadline established by the department/program. If no deadline exists, this report shall be filed with the department/program by the last working day in June each year.

Departments/programs can use the standardized SGS Annual Progress Report, or their own Annual Progress Report provided that it includes at minimum the material called for on the SGS Annual Progress report.

Annual completion and submission of a Progress Report for research Master's students[2] is recommended.

1."degree program" encompasses degree programs, joint degree programs, collaborative degrees, certificate programs and diploma programs under the administration of the School of Graduate Studies.

2. research Master's degrees are those Master's degree programs that require completion and successful defence of a thesis, currently designated by the course number 899.

APPEAL OF AN ASSIGNED GRADE IN A GRADUATE COURSE

Any student who is dissatisfied with an assigned grade in a graduate course can discuss the matter with the course instructor ("Instructor"), who can review the grade assigned and respond to the student informally. However, students could also request a more formal appeal of an assigned grade in a graduate course.

All graduate departments/programs are required to have a procedure whereby any graduate student who is dissatisfied with an assigned grade in a graduate course can appeal that grade.

Students MUST follow department/program procedures to appeal a grade in a graduate course if department/program procedures exist.

For any department/program with NO department/program procedure to appeal a grade in a graduate course, a graduate student who wishes to make such an appeal shall follow these steps:

1. The student will submit a Letter of Appeal to the Instructor, who will review the work in question. This Letter of Appeal to the Instructor must be submitted within two weeks after the date the grade was made available to the student. The Instructor must provide a written decision to the student within two weeks after the student's Letter of Appeal is received.

2. If the Instructor agrees to change a grade, a change of grade form shall be processed in the usual way. If the Instructor confirms the original grade, and the student wishes to appeal the Instructor's decision, within two weeks after the date of the Instructor's decision, the student must submit a Letter of Appeal to the Associate Dean of the School of Graduate Studies ("Associate Dean"), requesting a review of the grade. The Letter of Appeal must state clearly the student's grounds for the grade change. The Associate Dean shall forward the Letter of Appeal to the Department/Program Head or Graduate Coordinator in the department/program ("Head or Graduate Coordinator"), who will conduct a review of the grade within two weeks after receiving the student's Letter of Appeal. If the Associate Dean is the person responsible for assigning the grade (as the course instructor) the Letter of Appeal is to be submitted to an Associate Dean of the School of Graduate Studies who was not the course instructor.

The grade resulting from the review by the Head or Graduate Coordinator shall be recorded as the final official grade, and constitute an academic decision, irrespective of whether it is identical to, or higher or lower than the original grade. The Head or Graduate Coordinator will provide the Instructor, the student and the Associate Dean with written reasons for the grade resulting from the review, within two weeks after receiving the Letter of Appeal from the Associate Dean. A student may pursue further appeal of an assigned grade in a graduate course only on the basis of a specific procedural error(s) made in the department/program grade review procedures, or based on extenuating circumstances. Such appeal must be made to the Academic Appeal Board of the School of Graduate Studies within 2 weeks after receiving the written result of the review, using the process set out in Steps 4 and 5 in the Regulation titled A*ppeals Against Academic Decisions.*

Failed Grade for the Thesis: These procedures for review of an assigned grade do not apply when a failing grade (F) has been received on courses numbered 899 (Master's Thesis) or 999 (Doctoral Thesis). To appeal a failing grade (F) of a graduate thesis, the student must follow the Appeal of Thesis Examination Committee Decision, set out in the Regulation titled *Appeals Against Academic Decisions*.

Deadlines: The deadlines in #1 and/or #2 above can be extended if, upon written application by the requesting party (the student or the respondent), a satisfactory reason is provided for the delay and there is no prejudice to the other party.

APPEALS AGAINST ACADEMIC DECISIONS

General: Academic problems sometimes arise because of misunderstandings that can be resolved by informal discussion. The general approach of the University is to encourage the speedy resolution of academic problems informally and through the normal administrative routes, i.e., through discussion with coordinators of graduate studies and department/program heads, before pursuing formal appeal processes. If a graduate student is concerned about academic problems, it is wise to first seek advice and support from a supervisor, colleague or University Advisor. If this informal approach to the resolution of academic problems does not lead to a resolution, then the student may request that the School of Graduate Studies Academic Appeal Board (AAB) be convened to hear the appeal.

Academic decisions may be appealed on procedural grounds and/or on the basis of extenuating circumstances. Course marks or Examination Committee decisions cannot be overturned; however alternative actions (including the possibility of further exams) may be ordered by the AAB.

Students who appeal to the AAB should be aware that material submitted by the student in support of the appeal will be distributed to other parties participating in the appeal. Those individuals may include the course instructor ("Instructor"), the department or program's coordinator of graduate studies ("Coordinator") and the head of the department/program ("Head").

Structure of the Academic Appeal Board: For every appeal, the AAB shall be comprised of the Chair, who shall be a faculty member, another faculty member, and a graduate student. At least one faculty member and the graduate student shall be from the same general domain as the appellant, but no member shall be from the same graduate department or program as the appellant.

The Director of Admissions and Student Services of the School of Graduate Studies shall serve as the Secretary of the AAB.

Faculty members serving on the AAB shall be nominated by Faculty Graduate Councils or Committees.

Student representatives on the AAB shall nominated by Faculty Graduate Councils or Committees or by the Society for Graduate and Professional Students.

Faculty members on the AAB will be elected/appointed for two-year terms, and student members in the AAB will be elected/appointed for one-year terms. Both terms normally commence as of July 1 and are renewable.

From the faculty members nominated by the Faculty Graduate Councils or Committees, the School of Graduate Studies will appoint, for a two- year term, one faculty member to act as Chair and another to act as an alternate Chair (in the event of a conflict-of-interest situation or a multiplicity of hearings).

Roles and Responsibility of the Academic Appeal Board: Members of the AAB are members of the academic community of Queen's University, and as such will uphold the applicable policies and regulations of Queen's University. Parties to an appeal are required to abide by the university's policies and regulations.

The Chair of the AAB shall be responsible for ensuring that all procedures in this regulation are followed fairly and appropriately. The Secretary of the AAB shall be responsible for all administrative activities of the Board, such as but not limited to, scheduling all required meetings, distributing all documents for the appeal, including the final report of the AAB, and corresponding with all parties about the appeal process.

Normal Steps in the Appeal Procedures:

Step 1: If a student wishes to question an academic decision, other than those relating to thesis outcomes or an allegation of a departure from academic integrity, an appeal must first be made informally to the instructor or body whose decision is being questioned. The student must ensure that the instructor or body is aware of all the facts which the student believes should bear upon the reconsideration of the decision. This appeal must be submitted to the instructor or body whose decision is being questioned within two weeks after receipt of the decision. If the student is reluctant to approach the instructor or body personally, the student may seek the assistance of a University Advisor, the Student Advisors of the Society for Graduate and Professional Students, the University Ombudsman or other university advisor to do so on the student's behalf.

Step 2: If the student is unable to resolve the problem by informal discussion, and the student is not satisfied with the outcome of Step 1 and wants to further appeal the academic decision, an appeal must be lodged with the department/program Head or

Coordinator of Graduate Studies who will immediately inform the department/program Head. This appeal must be submitted to the Head or Coordinator of Graduate Studies within two weeks after receipt of the decision under Step 1. The Head must respond to the appeal within two weeks after receiving the appeal.

Step 3: If the student is not satisfied with the outcome of Step 2 and wants to further appeal the academic decision, an appeal must be lodged with an Associate Dean of the School of Graduate Studies within two weeks after receiving the written response from the Head or Coordinator of Graduate Studies under Step 2. The Associate Dean will meet with the student within two weeks after receiving the appeal. The Associate Dean must provide a written response within two weeks after the meeting with the student.

Step 4: If the student is not satisfied with the outcome of Step 3 and wants to further appeal the academic decision, the student must, within two weeks after receiving the written response of the Associate Dean of the School of Graduate Studies under Step 3, or after receiving the written decision following the review of an assigned grade in a graduate course, as the case may be, ask the Secretary of the AAB to convene the AAB to hear the appeal. The student must submit a written statement of appeal within one week after submission of the request to convene the AAB, to the Secretary of the AAB. The student's written statement of appeal must include copies of any written decisions received under Steps 1, 2 and/or 3 above.

The student's written statement of appeal: The student's written statement of appeal must clearly address;

1. the policies and procedures of the graduate program/department and/or the School of Graduate Studies and/or Queen's University that the student alleges were not followed, and/or

2 any extenuating circumstances that were beyond the student's control that impacted the student's academic performance contributing to the academic decision under appeal.

Any extenuating circumstance referred to in the student's written statement of appeal must be substantiated with appropriate supporting documentation.

If extenuating circumstances relate to a medical incident or condition, supporting documentation (such as a doctor's note) must be provided as part of the student's written statement of appeal.

If the student's written statement of appeal contains argument(s) or information about extenuating circumstances that were not presented in the prior step (Step 3), the AAB will remit the matter for reconsideration of the Associate Dean of the School of Graduate Studies.

The statement must include specific and relevant details of the procedural matter and/or extenuating circumstances pertaining to the appeal. The statement must also outline what the student seeks as a remedy from the AAB.

The AAB may decide not to consider the appeal if the student's appeal materials are incomplete or defective (e.g. illegible). If the decision is that the student's appeal materials are incomplete or defective, the Chair of the AAB, or the Secretary on the Chair's behalf, will notify the student. If the student rectifies the defect(s) or deficiency in the appeal materials within two weeks after the date of receipt of this notice from the Chair and resubmits the statement to the Secretary of the AAB, then the appeal proceedings will resume.

The written statement of response: The Head of the Department/Program shall be given the opportunity to respond in writing to the student's appeal. The opportunity to respond in writing could also be delegated to another department/program member, such as the Graduate Coordinator, or, the faculty member responsible for the academic decision under appeal.

The Secretary of the AAB will provide the Head (or delegate) with a copy of all appeal materials submitted by the student. The Head (or delegate) shall have two weeks after the date of receipt of these materials to submit a written statement of response to the Secretary of the AAB. Copies of all documents relevant to the matter or matters of the appeal that are in the possession or control of the Head (or delegate) shall be included in the written statement of response.

The written statement of response shall address the specific matters outlined in the student's written statement of appeal, and/or any and all procedures that are relevant to the matter under appeal. The written statement of response shall not include information that is irrelevant to the academic decision under appeal.

If no written statement of response is submitted by the deadline, the process will continue without this input.

Deadlines: On behalf of the AAB, the Secretary in consultation with the Chair may extend any time limit if, upon written application by the requesting party (the student

or the respondent), a satisfactory reason is provided for the delay and there is no prejudice to the other party.

Documents: Each party to the appeal is entitled to and shall receive every document that the Academic Appeal Board receives from the other party or parties to the appeal. All appeal materials will be treated confidentially, returned to and stored with the Secretary of the AAB, separate from the student's academic file.

Step 5: The Secretary of the AAB shall distribute the student's appeal materials and the written statement of response to the members of the AAB. Within one week after receiving all appeal materials, the Board shall convene to review the written material.

Upon the review of the written material, the AAB may determine that it does not have jurisdiction over the substantive matter of the appeal, and that the appeal cannot proceed any further before the AAB. If this is the decision, the Chair of the AAB shall inform the student of the decision and the reasons for the decision and will advise the student of the next avenue of appeal or consideration. If the AAB determines that it has jurisdiction over the substantive matter of the appeal, it will call for a meeting of all parties (see below) to hear the appeal.

The meeting of all parties: The AAB shall, within two weeks after their initial review, hold a meeting of all parties to the appeal. Under normal circumstances, it is anticipated that the appeal can be heard in its entirety at this meeting and that the AAB shall issue its decision within a further two weeks after the date of this meeting.

At the meeting of all parties, the student may be accompanied by a University Advisor or other support person. Although a student has the right to the assistance of a legal representative, such counsel is not usually desirable or necessary at this stage of the appeal procedure. The intent is to provide a fair hearing in an atmosphere of relative informality. The student must notify the Secretary of the AAB at least one week prior to the meeting if the student is to be assisted by a legal representative.

At the meeting of all parties, the student and the respondent or respondents are expected to present their cases, in brief oral statements. Each party will also be given the opportunity to respond to the other party's oral statement. Then, members of the AAB may ask questions of the parties to the appeal, and/or seek clarification of matters pertaining to the appeal. Then each party will be invited to make a closing statement. After closing statements the meeting of all parties shall end.

The written statements of appeal and response shall comprise the written documentation under consideration at the meeting of all parties. The Chair may exclude any document that is not included in the written statements of appeal and response.

At the meeting of all parties, the Chair may reasonably limit oral statements or discussions when satisfied that the relevant matter of the appeal has been fully and fairly covered, or if the statements or discussions are irrelevant.

If any party to the appeal fails to attend the meeting of all parties when it is scheduled, the meeting can still proceed. Alternatively, the Academic Appeal Board, with the consent of all parties, may hear the submission of the parties in separate meetings.

Disposition of Appeals: After hearing from all parties, the AAB may make one or more of the following decisions:

a. Uphold the Appeal: If the AAB upholds the student's appeal in whole or in part, it shall refer the matter back to the department/program or body concerned with specific instructions regarding the academic decision under the appeal. The department/program shall report back to the AAB on the implementation of the instructions. The AAB shall retain jurisdiction over the appeal pending receipt of the report from the department/program.

b. Deny the Appeal: If the AAB denies the appeal, it shall dismiss the appeal with written reason(s). The decision of the AAB may be appealed only to the University Student Appeal Board under the Senate Policy on Student Appeals, Rights & Discipline.

c. Make Recommendations on Policy, Procedures and Principle to the School of Graduate Studies: If the AAB, through hearing an appeal, identifies matters of policy, procedure or principle that have broad implications for the School of Graduate Studies, it should draw these to the attention of the Dean of the School of Graduate Studies.

Appeal of Thesis Examination Committee Decision: If the appeal is concerned with the decision of a Thesis Examination Committee ("Committee"), the appeal shall be made in writing to the Dean of the School of Graduate Studies or, if the Dean was a member of the Committee, to an Associate Dean of the School of Graduate Studies who was not a member of the Committee. The appeal must be made in writing and must be submitted to the Dean (or Associate Dean, as the case may be) within two weeks after the date of examination. If the person appealed to is unable resolve the problem within two weeks and the student wishes to appeal the decision of the Committee, the student

must within one further week submit a written request to the Secretary of the AAB of the School of Graduate Studies to convene the AAB to hear the appeal.

The student's written request must contain the student's statement of appeal, outlining clearly the student's ground for appeal and must include copies of all documents upon which the student intends to rely in the appeal.

The Secretary of the AAB will provide a copy of the student's appeal materials to the respondent. The respondent shall have two weeks after the date of receipt to submit a written statement of response to the Secretary of the AAB, which shall address the specific matter(s) outlined in the student's written statement of appeal and/or any and all procedures that are relevant to the matter under appeal and which shall also include copies of all documents relevant to the matter(s) under appeal that are in the possession or control of the respondent.

The appeal procedure will then continue as described in Step 5 above. The AAB may make one or more of the dispositions as described in the Disposition of Appeals section above.

No penalty or requirement to withdraw shall be put into effect until the student affected has either exhausted all channels of appeal or has allowed the time for appeal to lapse. Exceptions will be considered if an academic unit feels the interests or safety of other students or third parties would be compromised by the student's continued participation in the graduate program. See the Section titled Effective Date of Sanction, Penalty or Requirement to Withdraw, and related Commentary, in the Senate Policy on Student Appeals, Rights & Discipline.

COMPLETION OF PROGRAMS

Graduate students are considered to have completed all requirements for the degree when all academic requirements have been met, and when all due fees have been paid. Specifically, for thesis or research students (all Doctoral students, and those Master's students registered in 899), a student is considered complete when one electronic copy of the thesis, in PDF format revised as recommended by the Thesis Examining Committee and finally approved by the supervisor/committee, is submitted to the School of Graduate Studies.

Exceptions to submission of an electronic copy of the thesis will be made by the School of Graduate Studies on a case-by-case basis. If it is decided that no electronic copy can be submitted, at least one paper copy revised as recommended by the Thesis Examining

Committee and finally approved by the supervisor/committee must be submitted to the School of Graduate Studies in fulfillment of degree requirements.

At the time of submission for completion of degree requirements the student may also submit up to two unbound paper copies of the thesis. The paper copy or copies will be bound by the School of Graduate Studies. The bound copy or copies will be returned to the student and to the thesis supervisor.
All courses taken by the student must appear with a mark on the student's academic record (transcript), along with all other requirements pertinent to the degree (language, comprehensive examination, etc.). Normally, the transcript notes the completion of these other requirements upon submission of the thesis for examination.

Tuition fees will be charged up to the date of receipt of the final approved copy of the thesis.

For non-research Masters students (those completing a Master's degree through course work, project, essay or report routes), a student is considered complete upon submission by the Department/Program to the School of the Master's Program Completion form. This form details the student's program of study, the marks received, and the examination and acceptance of a project, essay or report, if required. The form is signed by the Head of the Department/Program (or delegate).

All courses taken by the student must also appear with a mark on the student's academic record (transcript), along with all other requirements pertinent to the degree. Tuition fees will be charged up to the date of receipt of the Master's Program Completion form.

A student who completes a program in the middle of a term is normally eligible for a partial refund in fees. See the General Regulation Refund of Fees.

COMPREHENSIVE/QUALIFYING EXAMINATION REQUIREMENT

General Purpose

The purpose of the comprehensive/qualifying examination is:

- to assess the ability of students to communicate their knowledge and understanding of their discipline or area of study, and

- to evaluate students' grasp of the current state of the knowledge in their intended research area including relevant methodologies and approaches.

In many units the comprehensive/qualifying examination also serves to assess the feasibility of the student's research proposal in terms of scope, originality and achievability.

Students who pass the comprehensive/qualifying examination have adequately demonstrated their preparedness to undertake their thesis research.

All departments/programs must have written documentation relating to the details of the format, structure, timing and evaluation of the comprehensive/qualifying examination readily available to students and faculty members in the unit. Students entering doctoral programs should consult the documentation in the early phases of their program so that they can plan their progression through the program accordingly. If, following a review of the department/program written document concerning the comprehensive/qualifying examination process, the student still has questions, they should be addressed to the Coordinator of Graduate Studies.

General Guidelines

The general format of the comprehensive/qualifying examination should be consistent for all doctoral students registered in a particular program. Programs may require more than one format and/or provide students the option of more than one format. Programs may require that all students complete one or more specific elements (or components) or provide students the option of selecting one or more elements based on individual student's academic needs and interests in exploring how their disciplinary knowledge and skills may be applied in various contexts. See the Table (PDF 61KB) for examples of common formats and elements.

Given the importance of the comprehensive/qualifying examination in determining students' preparedness to conduct their research, it is important that the timing of the examination is such that students are able to fully engage in research as early as possible and progress toward timely degree completion.

All departments/programs require doctoral students to take this examination, but not all departments/programs require master's students to take it.

The comprehensive/qualifying examination is to be held within the first two years of registration in the PhD program[1]. Some departments/program require the comprehensive/qualifying examination to be held at an earlier point in the PhD

program. Students must follow the timeline established by their department/program for this degree requirement.

The Comprehensive/Qualifying Examination Committee

The Comprehensive/Qualifying Examination Committee for the doctoral student may consist of:

- The Head of the department/program (or delegate) -Chairperson
- The Supervisor and/or Supervisory Committee
- Other members of the department/program as selected by the Head of the department/program
- A community/industry/external expert

The Comprehensive/Qualifying Examining Committee for the master's student is similarly constituted. Other members of the department/program may be invited as observers.

The result of the examination shall be determined by the committee and, if favourable, recorded for submission to the School of Graduate Studies.

If the result is not favourable, the committee may elect either to re-examine or to recommend to the School of Graduate Studies that the student be required to withdraw (refer to section *Withdrawal on Academic Grounds*).

[1]A change to the prescribed timing for completion of the comprehensive/qualifying examination may be part of a formal academic accommodation arrangement between a graduate student and the university. In those cases, the timing for completion of the comprehensive/qualifying examination will be determined on a case by case basis. For information, see the policy Accommodation of Graduate Studies with Disabilities.

CONFLICT OF INTEREST

Fairness or objectivity may be compromised, or be seen to be compromised, if academic evaluation is conducted, even in part, by someone with whom there is a close personal tie (for example, family member, partner in an intimate relationship, or housemate). Where such a tie exists between student and evaluator, the parties involved have a responsibility to declare a potential conflict of interest, normally to the Department/Program Head or Dean, who shall assist, without prejudice, in arranging evaluation by alternative means. (For the purposes of this regulation, evaluators are understood to include professors, supervisors, lecturers, tutors, markers, teaching

assistants, lab demonstrators, and members of thesis or comprehensive examination committees.)

COURSE WORK REQUIREMENTS

General: Courses offered by graduate departments/programs may be full course (two terms in length) or half-course (one term in length). In most cases a full course is equal to three lecture hours per week per term for 2 terms, and a half course is equal to three hours per week for 1 term. Course descriptions are given in the department/program calendar entry. Each half-course is labeled by an asterisk, e.g. MATH-912*.

The code number of each course normally consists of four letters and three digits. The letters show the alpha code of the Department and the first digit the course level. Undergraduate courses are numbered in levels 1-4, whereas graduate courses are numbered 8 and 9, e.g., course BIOL-300 is a full course offered by the Department of Biology at third year level and CHEM-843* is a half course offered by the Department of Chemistry at the graduate level.

Students must register for all courses that they plan to take in a particular session. This should be done at registration or soon after, but not later than the deadlines set out in the Sessional Dates for the academic session.

Registration: Any changes in courses must be approved and recorded on an academic change form (see Change of Registration).

NOTES

1. Prerequisite courses taken by qualifying or preparatory students cannot be credited to the main program.
2. A graduate course that is offered jointly with an undergraduate course cannot be taken for credit by any student who previously obtained credit for the undergraduate course.

a. **Primary Courses** : The courses required for a student's approved program of study are designated as primary. The number and type of courses depend upon the degree program for which the student is registered, the field of study, and the departmental requirements. Courses offered are normally graduate courses (800 and 900 series). However, some Graduate Departments/Programs may offer advanced undergraduate courses with additional work and a proviso for a higher standing to be obtained.

In the primary courses the student must attain a minimum grade of B- (B minus)

b. **Failure of a primary course** : In cases when a student does not achieve B-in a primary course, the Head or Graduate Coordinator of the Graduate Department/Program may recommend to the Faculty Graduate Council/Committee that the student:

i. repeat the examination (or equivalent) within one year after the original examination(or equivalent), or
ii. repeat the course, or
iii. take a substitute course. If approved, a student may take another course approved by the Faculty Graduate Council/Committee to allow them the opportunity to complete the degree requirements.

If such a recommendation is not made or, if made, is not approved by the Faculty Graduate Council/Committee, any student who fails to obtain the required standing in any primary course shall be required to withdraw.

Graduate Departments/Programs may also recommend that a student be required to withdraw due to the failure of a primary course (see Withdrawal on Academic Grounds).

The failed course and grade will not normally be removed from the transcript.

c. **Secondary Courses**: Courses additional to the student's approved program are designated as secondary. These may be taken only with the permission of the Department and the instructor. In a secondary course, a standing of less than B-may be acceptable; however, the mark will be entered on the student's transcript.

d. **Course Auditing** : Students registered in a graduate degree program may audit graduate or undergraduate courses, provided they obtain the permission of the Department/Program and the instructor. Some undergraduate faculties have restrictions on what courses may be audit. Consult the Academic Calendar of the relevant undergraduate faculty for details.

e. **Undergraduate Student Enrolment in Graduate Courses** : Outstanding undergraduate students may be permitted to take graduate courses under the following conditions:

- i. enrolment of undergraduates in graduate courses needs the approval of the instructor and the Chair of Undergraduate Studies in their Department/Program of concentration and the School of Graduate Studies;

- ii. permission to enroll in a graduate course as part of an undergraduate program is only available to fourth year students whom the department/program deems outstanding (generally taken to mean first class standing);
- iii. upon the recommendation of the Graduate Department/Program to the Faculty Graduate Council/Committee, and with the agreement of the School of Graduate Studies, graduate courses taken by an undergraduate student may be applied as credit towards a subsequent graduate degree, provided that those graduate course credits have not been credited towards any other degree of any kind; however see iv. below;
- iv. A graduate course or courses taken by an undergraduate student may be applied as credit towards both the undergraduate degree and the subsequent graduate degree, as part of an approved combined Bachelor's/Master's degree program;
- v. registration of an undergraduate in a graduate course which is NOT part of an undergraduate program or an approved combined Bachelor's/Master's degree program must take place through the School of Graduate Studies. The registration must be as a special student and meet the conditions set out in the School of Graduate Studies calendar. Fees for graduate courses taken as a special student will be assessed in addition to undergraduate fees. See Admission and Registration, Special Student.

f. **Graduate Student Enrolment in Undergraduate Courses** : Students registered in the School of Graduate Studies at Queen's who hold an undergraduate degree from Queen's may seek the permission of the Faculty of Arts and Science to enroll in undergraduate Arts and Science courses as post-degree students not on a degree program. Because of enrolment pressures, such students are restricted to online courses offered through Continuing and Distance Studies. These undergraduate courses will NOT be credited towards the graduate degree requirements.

Students registered in the School of Graduate Studies at Queen's who do not hold an undergraduate degree from Queen's and who want to enroll in undergraduate Arts and Science courses, must apply for admission to the Faculty of Arts and Science to register as post-degree students not on a degree program. Because of enrolment pressures, such students are restricted to online courses offered through Continuing and Distance Studies. These undergraduate courses will NOT be credited towards the graduate degree requirements.

Students registered in the School of Graduate Studies at Queen's who wish to take a course(s) in the Faculty of Arts and Science as part of their registration as a graduate student must have permission of both the School of Graduate Studies and the Associate

Dean (Studies) of the Faculty of Arts and Science. Because of enrolment pressures, such students are restricted to online courses offered through Continuing and Distance Studies. Students registered in the School of Graduate Studies at Queen's who wish to take an undergraduate course(s) from Queen's University faculties other than the Faculty of Arts and Science, should consult the undergraduate faculty office to see if this is possible. These undergraduate courses would not normally be counted towards the graduate degree requirements.

g. **Queen's University Senate Policy on Transfer of Course Credits** : Queen's University subscribes to the General Policy on the Transfer of Course Credits, as adopted by the Council of Ontario Universities. Acceptance of transfer credits among Ontario universities shall be based on the recognition that, while learning experiences may differ in a variety of ways, their substance may be essentially equivalent in terms of their content and rigour. Insofar as possible, acceptance of transfer should allow for the maximum recognition of previous learning experience in university-level courses. Subject to: i) admission, and ii) degree, grade and program requirements, any courses offered for credit by one Ontario university shall be accepted for credit by another Ontario university when there is an essential equivalency in course content. For further information pertaining to the policy of the transfer of courses credits for graduate students contact the School of Graduate Studies.

h. **Queen's University Senate Policy on Student Access to Final Examination Papers** : Final examination question papers are normally to be made available within six months of writing to students for reference purposes. The relevant Faculty or School may grant exemptions from the policy for particular examination question papers. Final examination question papers administered through the Examinations Office that are not exempted from the policy should be released to the Library. Definitions: Final examination paper: means the final examination question paper in a course and the graded answer paper written by the student which, by Senate policy, must be retained for a period of 12 months. Appeal refers to the procedure by which any student may formally appeal a final grade in accordance with the established appeal procedure (re-read procedure) of the Faculty or School offering the course.

Access: Informal Access: Instructors may informally review the final examination paper with a student who requests it and are encouraged to do so. However access may not be granted before the final marks are released.

Formal Access : As a part of the process of appeal, and upon request, the student will obtain access by a method determined by the Department/Program or School. This may be either supervised access to, or a copy of, the final examination paper as well as all

other material submitted by, but not returned to, the student and for which a mark has been assigned.

i. **Queen's University Senate Language Policy**: Normally examinations and assignments are to be submitted in English, except where a Faculty Board has approved an alternative practice or where a special agreement has been entered into between an instructor and a student, with the approval of the Department/Program Head, for submission of work in a language other than English.

j. **Religious Observance and Examinations** : A student who discovers that an exam scheduled by the Exams office at the same hour as a religious observance, should report the conflict to the exams office in Gordon Hall as soon as possible. Individual arrangements are made for each student.

DEGREES

Departments/Programs in the School of Graduate Studies offer programs of study leading to the following graduate degrees, graduate diplomas and graduate certificates:

Doctor of Philosophy (Ph.D.)
Master of Arts (M.A.)
Master of Art Conservation (M.A.C.)
Master of Education (M.Ed.)
Master of Industrial Relations (M.I.R.)
Master of Laws (LL.M.)
Master of Public Administration (M.P.A.)
Master of Science (M.Sc.)
Master of Applied Science (M.A.Sc.)
Master of Urban and Regional Planning (M.PL.)
Master of Engineering (M.Eng.)
Master of Science in Occupational Therapy (M.Sc. [O.T.])
Master of Science in Physical Therapy (M.Sc. [P.T.])
Master of Environmental Studies (M.E.S.)
Master of Public Health (M.P.H)
Master of Science (Healthcare Quality) (M.Sc. [H.Q.])
Master of Nursing Science (M.N.Sc.)
Master of Nursing (Primary Health Care Nurse Practitioner) (M.N. [PHCNP])
Master of Science (Aging and Health) (M.Sc. [A.H.])
Professional Master of Education (PME)
Graduate Diploma in Social Performance Management in the Extractive Industries

(GDSPMEI)
Graduate Diploma in Aging and Health (GDAH)
Graduate Diploma in Professional Inquiry (GDPI)
Graduate Diploma in Risk Policy and Regulation (RPRD)
Primary Health Care Nurse Practitioner Diploma (DPHCNP)
Master of Earth and Energy Resources Leadership (MEERL)
Arts Management Graduate Diploma (AMGD)
Master of Arts (Arts Leadership) (MAAL)
Graduate Diploma in Medical Sciences (GDMSc)
Professional Master of Medical Sciences (MMSc)
Graduate Diploma in Biomedical Informatics (GDipBI)
Professional Master in Biomedical Informatics (MBI)
Doctor of Science in Rehabilitation and Health Leadership (DSc RHL)

Some departments/programs cooperate to offer collaborative master's programs requiring study in two different but related fields. Students who wish to undertake such programs should contact the Head or Graduate Coordinator of the applicable Department/Program.

Further information concerning the Departments/Programs and the programs of study which they offer may be found in the chapter on them.

NOTES
1 The Smith School of Business administers all Master of Business Administration degrees and other graduate level credentials.
2 The Faculty of Medicine administers all postgraduate training programs which are offered by medical departments to Doctors of Medicine who wish to prepare for the fellowship examinations set by the Royal College of Physicians and Surgeons of Canada.

ELECTRONIC INFORMATION SECURITY POLICY FRAMEWORK

The computing and network systems at Queen’s University are intended to support teaching, research and administrative purposes and to enhance the broader learning environment. All Queen’s computer users should be aware that they have access to valuable and sensitive resources, and that their computing and network practices can adversely affect others. Users should also understand that the Queen's University Electronic Information Security Policy Framework applies fully to the use of all personal computers and other devices while they are connected to the Queen’s network.

Students are responsible for making themselves fully aware of the complete Senate policy called Electronic Information Security Policy Framework, and all related policies and documents, available from the website:

http://www.queensu.ca/secretariat/policies/senate/electronic-information...

Alleged violations of the Electronic Information Security Policy Framework shall be dealt with as outlined in the framework document and/or related policies and documents.

EXTENSION OF TIME LIMITS

Effective for students admitted September 1, 2013 and all subsequent years:

An extension of the standard time limit for completion of a doctoral degree program to five years may be made by a Department/Program based on a discipline-related rationale and a plan to support students in progressing toward completion. Such a decision must be communicated to students via the Graduate Handbook or website and to the School of Graduate Studies. Otherwise Departments/Programs will grant a one year extension to graduate students in good standing and who can demonstrate how they will progress toward degree completion within an additional year (3 terms) beyond the standard timeframe of 1 year (3 terms) or 2 years (6 terms) for a Master's and 4 years (12 terms) for a PhD. The Department/Program must inform the School of Graduate Studies of extensions granted prior to the end of term 4 or 7 (1 or 2 year Master's programs) or term 13 (PhD).

Requests for an extension beyond term 6 of a one year Master's program, term 9 of a two year Master's program or term 15 of a PhD program must be submitted to the School of Graduate Studies on a Time Limit Extension Request Form before the end of term 6 or 9 of a Master's program or term 15 of a PhD program. A request will be considered for approval if there is satisfactory evidence of progress (e.g. drafts of chapters) or extenuating circumstances that could be personal or research-related and which have significantly delayed the student's progress. Such requests must be supported by the Department/Program and be accompanied by the supervisor's assessment of the student's progress and a plan for completion within 12 months (3 terms). Doctoral students must append a copy of their end of year 4 progress report and their end of year 5 progress report.

Subsequent extension requests may be approved under extenuating circumstances (personal or research related).

NOTES:

1. Terms in which a student's registration status is inactive are not counted when calculating the overall time registered in the program.

2. The decision in response to an extension request is an Academic Decision. If denied, the student will be informed of the reasons in writing and advised that they may appeal the decision under the policy Appeal Against Academic Decisions.

3. An extension of the prescribed time limits for completion of the degree program may be part of a formal academic accommodation arrangement between a graduate student and the university. In those cases, extensions beyond the second extension, will be considered on a case by case basis. For information, see the policy Accommodation of Graduate Studies with Disabilities.

Effective for students admitted before September 1, 2013:

Extensions of the prescribed time limits for completion of a degree program may be granted in some cases. An extension will only be granted for valid, documented reasons, to graduate students whose academic record is otherwise satisfactory and who can clearly demonstrate how they will fulfill program requirements within a stated period of time not to exceed 12 months. A Time Limit Extension Request form must be completed by the student in consultation with the supervisor and submitted to the Graduate Coordinator of the Department/Program. If the Department/Program supports the request, it must then be referred to the School of Graduate Studies for approval at least one month prior to the beginning of the term of the proposed extension.

Any request for an extension must be supported by a written explanation from the supervisor, who must provide a detailed assessment of the student's progress and the student's plans for timely completion of the outstanding program requirements within the stated period of time.

Requests for a second extension are not normally approved, but will be considered for approval if extenuating circumstances have delayed the student's progress.

Requests for a second extension for a stated period of time not to exceed 12 months, must be made using the same Request form and must include the supervisor's support and assessment as above. A request for a second extension will not be considered nor

approved unless details are provided that outline all progress made since the last time limit extension was granted.

Subsequent extension requests (past a second extension) will not normally be approved.

NOTE: An extension of the prescribed time limits for completion of the degree program may be part of a formal academic accommodation arrangement between a graduate student and the university. In those cases, extensions beyond the second extension, will be considered on a case by case basis. For information, see the policy Accommodation of Graduate Studies with Disabilities.

INTELLECTUAL PROPERTY, RESEARCH AND PATENTS

Intellectual property is defined as any result of intellectual or artistic activity that can be owned by a person. Specifically, this includes inventions, publications, computer software, works of art, industrial and artistic designs, as well as other creations that can be protected under patent, copyright, or trademark laws.

Members of the University include members of faculty, staff and student body, while employed by, affiliated with, or registered at Queen's University.

With respect to intellectual property, graduate students are governed by the policies outlined in the Senate document on intellectual property. This document can be viewed on the University Secretariat website.

Graduate students are encouraged to refer to sections 4.4 and 4.5 of the Roles and Responsibilities in Graduate Studies: A Guide for additional information. In addition, the staff at PARTEQ Research and Development Innovation, located on Queen's campus, are available to provide advice on the protection and commercialization of intellectual property.

OFF-CAMPUS STUDY

Subject to the residency requirement of the Department/Program, students registered in a master's or a doctoral program at Queen's University may be permitted to study at another approved university, institution, library or laboratory under the conditions listed below. Full-time off-campus registration must be recommended by the Department/Program via submission of the Request for Full Time Study Off Campus form. The request must be approved by the School of Graduate Studies. Students with Full time off campus status are responsible for registering their off campus activities

through Queen's University Off-Campus Activity Safety Policy On-line Planning Tool (OCASP 2.0) and must go through the on-line pre-departure orientation.

- a. If a graduate student wishes to take a graduate course at another university in Ontario, such study may be carried out under the Ontario Universities Visiting Graduate Student Plan. This plan allows a graduate student of an Ontario university to take graduate courses at another Ontario university while remaining registered at the home university. The plan allows the student to bypass the usual application for admission procedures to the host university and facilitates transfer of course credits to the home university. The student pays fees to the home university and is classed as 'visiting graduate student' at the host university, to which no fees are paid. The student must make application for study under this Plan by completion of a special application form which is available at departmental /program offices or from the School of Graduate Studies. Students may not audit courses under this plan nor enroll in any courses which are not to be credited towards their degree program. The student must be registered at Queen's as full-time off-campus.
- b. If a graduate student registered in a graduate program at Queen's University wishes to study at another approved university or academic institution outside Ontario, the student might be required to enroll as a full-time student at the other university or institution, and pay the fees required by that university. Full-time off-campus status must be requested, granted and maintained at Queen's University during the period spent at the other university or institution. An exemption from Queen's University graduate program tuition fees for that period may be granted. Granting a tuition waiver under this regulation is normally agreed to only once during a student's graduate program. The full time tuition and/or mandatory fees assessed by the other institution must be approximately equal to the full time graduate program tuition assessed at Queen's for the same period of time, for a waiver of Queen's tuition to be granted. See the General Regulation Full- Time, a.
- c. If a student wishes to study at a library, laboratory or institution outside Queen's University, full-time off-campus registration at Queen's must be maintained and normal tuition fees must be paid to Queen's University, less any obligatory fees charged by the library, laboratory or institution in question. The student will conduct such study under the continued supervision of the Queen's department/program. Full- time off- campus status must be requested and granted. See the General Regulation Full -Time, a.

REQUIREMENTS FOR DEGREE PROGRAMS

The minimum requirements for the various degree programs are listed below. Departments/programs which have requirements in addition to these minimal specify them in their particular departmental/program calendar entry, and/or in other departmental/program documents.

Master's Degree Programs

The requirements for the master's program, as set out by the graduate department or program, must be completed satisfactorily within the specified time limit after initial registration in the program. It should be noted that the specified time to completion is a time LIMIT and is not indicative of normal program duration.

The specified time to completion of graduate programs falls under this regulation: Time Limits for Completion of Programs.

Master's students registering in a full-time program must pay full-time fees for the duration of their program. The only exception is when personal family or health circumstances prevent continuation as a full-time student.

There are master's programs that are designed to be part-time programs. They are in Education (Part-time M.Ed.) and Policy Studies (Professional MPA and Professional MIR). The requirements and variations in admission standards are described in detail in the calendar sections for these programs.

Departments/programs may recommend acceptance of students specifically as part-time students throughout their program. Before acceptance, the Department/Program will provide to the School of Graduate Studies a detailed program of study proposal for each student lasting for not less than six terms of active study. The part-time student will normally register for no more than one half course, or its equivalent, per term. See the general regulation Part time.

In cases where a student, seeking initial acceptance into a master's program as a part-time student, intends to complete the program with a registration pattern including one or more subsequent terms of full-time registration, the Department/Program must, before acceptance, provide a detailed program proposal for approval of the School of Graduate Studies.

See Transfers from full-time to part-time status.

Master's Degrees Patterns (for all departments/programs except those in Engineering and Applied Science):

PATTERN I

- a. Courses: Two session-length or four term-length graduate courses. Selection of courses is subject to departmental/program approval. The student must obtain satisfactory standings in the courses (see Course Work Requirements).
- b. Research and Thesis: The student must prepare a satisfactory thesis and successfully defend it (see General Regulations Research and Thesis).

NOTE: In some departments/programs the make-up of a program may differ from the above (e.g. more coursework and a shorter thesis).

PATTERN II

- a. Courses: Four session-length or eight term-length graduate courses. Selection of courses is subject to departmental approval. The student must obtain satisfactory standings in the courses (see Course Work Requirements).
- b. Project or Essay: A project with report or a master's essay prepared under direction. In either case, the work may be submitted to an examining committee for approval. In some departments/programs the student may be required to defend the report before an examining board.

PATTERN III

- a. Courses: A minimum of four session-length or eight term-length graduate courses. Some Master's programs require more than four session length or eight term length graduate courses. Selection of courses is subject to departmental/program approval. The student must obtain satisfactory standings in the courses (see Course Work Requirements).
- b. Other requirements (if any): Some departments/programs have requirements in addition to courses, as outlined by the Department/Program.

Master's Degrees Patterns for all departments/programs in Engineering and Applied Science:

1. **Research Master's Degree -M.A.Sc. (Master of Applied Science)**:

- a. Courses: A minimum of four term-length graduate courses (or approved equivalent). Some departments/programs require more than four term- length graduate courses (or approved equivalent) to complete this pattern. Selection of courses is subject to departmental/program, and in some instances, School of Graduate Studies, approval. The student must obtain satisfactory standings in the courses (see Course Work Requirements).
- b. Research and Thesis: The student must prepare a satisfactory thesis and successfully defend it (see General Regulations Research and Thesis).
- c. Other requirements (if any): Some departments/programs have additional requirements, as outlined by the Department/Program.

Note: Students who choose the Research Master's Degree pattern in the departments in Engineering and Applied Science, enrol in and receive the degree of Master of Applied Science (M.A.Sc.).

2. **Coursework Master's Degree (M.Eng.)**:

- a. Courses: A minimum of eight term-length graduate courses (or approved equivalent). Some departments/programs require more than eight term-length graduate courses (or approved equivalent) to complete this pattern. Selection of courses is subject to departmental/program, and in some instances, School of Graduate Studies, approval. The student must obtain satisfactory standings in the courses (see Course Work Requirements).
- b. Project: A project prepared under direction. In some departments the student may be required to defend the project before an examining board.

In some departments the make-up of a program may differ from a + b above (e.g. 9 term courses and no project).

c. **Other requirements (if any)**: Some departments/programs have additional requirements, as outlined by the Department/Program.

Note: Students who choose the Coursework Master's Degree pattern in the departments/programs in Engineering and Applied Science, enrol in and receive the degree of Master of Engineering (M.Eng.).

Not all departments offer the Coursework Master's Degree pattern.

Doctoral Degree Programs

The requirements of doctoral programs, as set out by the graduate department or program, must be completed satisfactorily within the specified time limit after initial registration in the program. It should be noted that the specified time to completion is a time LIMIT and is not indicative of normal program duration.

The specified time to completion of graduate programs falls under this regulation: Time Limits for Completion of Programs.

Departments/Programs offer only one pattern of study for the doctoral degree in which research is the major requirement.

The requirements of doctoral programs are:

- a. Courses The number of courses prescribed depends on the student's background in relation to the chosen field of study and on the departmental /program requirements. (See Course Work Requirements.)
- b. Research and Thesis The research and thesis will normally take up at least two-thirds of the student's full-time study requirement. The student must pursue original academic concepts in the field of study and be able to defend the subsequent presentation of them in the thesis, and at an oral thesis examination. (See General Regulations Research and Thesis).
- c. Comprehensive/Qualifying Examination All doctoral students must meet the requirements for the Comprehensive/Qualifying Examination in their department /program during the course of their studies. See Comprehensive/Qualifying Examination Requirement.
- d. Language Some departments/programs may require the student to obtain a reading knowledge in one or two languages other than English. This requirement must be fulfilled one year before submitting the thesis. See Additional Language Requirement.
- e. Registration status Doctoral students registering in a full-time program must pay full-time fees for the duration of their program. The only exception is when personal family or health circumstances prevent continuation as a full-time student.

Departments/programs may recommend acceptance of students specifically as part-time students throughout their doctoral program. Before acceptance, the Department/Program will recommend, for approval by the School of Graduate Studies, a detailed program of study proposal for each student lasting for not less than six terms of active study. The part-time student will normally register for no more than one half course, or its equivalent, per term. See the general regulation Part time.

For information on transfers from full-time to part-time status see Transfers from Full-time to Part-time status.

RESEARCH

In most graduate degree programs students must carry out research for their thesis or project as directed by the appointed supervisor. For a master's program, the research must be of high scholarly standard; for a doctoral program, it must be original and should further existing knowledge of the subject.

Selection of the subjects upon which the research and thesis will be based is made by the student in consultation with his/her supervisor or committee.

Most research should be done within the facilities of the Department/Program and Queen's University, but in circumstances where these are inadequate or where the work must be done in the field, students may apply through the Department/Program to the School of Graduate Studies for permission to do their research outside the university. This will be granted only if the School of Graduate Studies has assurance, in writing, from the student's supervisor/committee that:

a. the student will be doing the research personally, as directed by the supervisor, and
b. the supervisor/committee will have access to and knowledge of the field operation, outside laboratory, or library to direct the student.

This change of research venue is requested via the Full Time Off Campus regulation and procedures.

RESIDENCE REQUIREMENT

To become fully involved in a field of study and to be satisfactorily in contact with members of the Department/Program and students in the field, it is necessary to be studying on a full-time basis and be full-time on-campus for some part of the degree program. This is known as being "in residence". While the School of Graduate Studies has no formal requirements for length of residence, departments/programs may impose such requirements, if they are appropriate to the program of study.

Full-time off-campus registration must still be approved as specified in the regulation Full-Time.

Students admitted to a degree program on a part-time basis are responsible for maintaining close contact with faculty members and students in their field of study. They will normally be expected to take at least one, one-term course in two of the three terms per year in every year until the course requirements have been met.

STRUCTURE OF GRADUATE DEGREE PROGRAMS

A student's program of study is structured based on a set of requirements laid down for the degree by the departments/programs and the School of Graduate Studies.

Master's programs: The basic patterns of requirements for master's degrees are:

Program Pattern I
Advanced courses plus research and thesis

Other Patterns for Master's Degrees

For Master's degrees only, some departments/programs offer alternative patterns of program requirements:

Program Pattern II
Advanced courses plus project and report, or plus master's essay(s).

Program Pattern III
Advanced coursework.

A master's degree taken according to one of the alternative patterns represents an equivalent standard of academic achievement to that of the same degree taken according to Pattern I.

The program of study depends on the student's academic background, field of study, and the department/program requirements for the degree. It is drawn up by the student's supervisor and submitted to the School of Graduate Studies for approval according to its procedures. The program is then entered into the student's record. This should be done early in the initial term of registration.

Once a student's field of study has been determined, a supervisor or supervisory committee with expertise in that field is appointed by the Head of the Department/Program or the department/program committee on graduate studies according to the procedures of the home department/program.

Doctoral programs: See Requirements for Degree Programs for details on the standard structure and requirements of Doctoral programs. The requirements of doctoral programs, as set out by the graduate department or program, must be completed satisfactorily within the specified time limit after initial registration in the program. It should be noted that the specified time to completion is a time LIMIT and is not indicative of normal program duration.

THESIS

GENERAL

The thesis is a major requirement of most graduate degree programs and must be expressed in a satisfactory literary form consistent with the discipline concerned and display a scholarly approach to the subject and a thorough knowledge of it.

The thesis must be defended in an oral thesis examination. Parts of the thesis may be prepared in a form suitable for separate publication, but overall it must comprise a coherent account of a unified research project rather than a collection of loosely connected studies. Publication or acceptance for publication of research results prior to presentation of the thesis in no way supersedes the University's judgment of the work at a thesis examination. A critical review of previous work related to the subject and a concluding summation of the contribution made in the thesis to scholarship in the chosen field must be included in the thesis.

The master's thesis should demonstrate that the candidate is capable of original and independent work; that of a doctoral student must be original and be of such value as to merit publication.

Further guidance on the specific requirements of the department/program with respect to the thesis may be obtained from the student's supervisor. Many departments/programs require their students to submit a thesis proposal for approval before the student begins work on it. A student engaged in research for a thesis must register it as a course, Master's Thesis 899 or Doctoral Thesis 999.

All graduate students working on a thesis must register for each term until they have completed the requirements for their degree program. Please note that requirements are considered complete when one electronic copy of the thesis, in PDF format revised as recommended by the Thesis Examining Committee and finally approved by the supervisor/committee, is submitted to the School of Graduate Studies, via the online "E-thesis" submission process.

Exceptions to submission of an electronic copy of the thesis will be made by the School of Graduate Studies on a case-by-case basis. If it is decided that no electronic copy can be submitted, at least one paper copy revised as recommended by the Thesis Examining Committee and finally approved by the supervisor/committee must be submitted to the School of Graduate Studies in fulfillment of degree requirements.

At the time of submission for completion of degree requirements the student may also submit up to two unbound paper copies of the thesis. The paper copy or copies will be bound by the School of Graduate Studies. The bound copy or copies will be returned to the student and to the thesis supervisor.

Thesis Format

The thesis must conform to one of the two formats described in the document, General Forms of Theses, which may be obtained from the website of the School of Graduate Studies, under Thesis Formatting & Other Resources.

Membership of all Thesis Examining Committees

Normally, with the exception of the "external" examiner on a doctoral candidate's thesis examining committee (see below), thesis examining committees shall comprise Queen's University faculty who are members of the School of Graduate Studies. The online calendar of the School of Graduate Studies contains the most up- to -date listing of faculty members of the School. The appointment of thesis examining committee members who are NOT members of the School must be approved in advance by the Dean of the School of Graduate Studies.

Attendance at the oral thesis examination

For the purpose of this Regulation: "Queen's community" includes all faculty, staff, and students of the University; "Visitor" means anyone who is not a member of the Queen's community; and "Supervisor" means the faculty member (or members) designated as the supervisor(s) at the time of the oral thesis examination.

Oral thesis examinations are normally open, meaning that all members of the Queen's community may attend. Visitors may attend an open oral thesis examination at the invitation of both the candidate and the supervisor(s), which must be made at least one week prior to the scheduled date of the oral thesis examination. The Head of the Department/Program must be informed of any visitors who have been invited to the oral thesis examination. Only members of the Examining Committee may ask questions

of the candidate, and only members of the Examining Committee may be present during the preliminary and post-examination sessions.

An oral thesis examination may be closed, meaning that only members of the Examining Committee may be present. An oral thesis examination may be closed for justifiable reasons (such reasons may include the need to protect rights to intellectual property or commercial publication, to honour contractual obligations owed to third parties, or for accommodation requirements). A request for a closed oral thesis examination may be made either by the candidate, or by (any of) the candidate's supervisor(s) to an Associate Dean of the School of Graduate Studies. In the event that either the supervisor(s) or the candidate does not agree to the request for a closed oral thesis examination, the request may nonetheless be granted, unless the dissenting party provides justifiable reasons for not agreeing to a closed oral thesis examination. The decision to grant or deny the request for a closed oral thesis examination shall be made by an Associate Dean of the School of Graduate Studies.

At the time of the oral thesis examination the Chair of the Examining Committee shall have final authority to determine who is eligible to attend the oral examination. Attendance at an open oral thesis examination may be limited due to room capacity.

The Chair of the Examining Committee may ask members of the Queen's community and all visitors to leave the examination after the oral presentation made by the candidate, in cases where a presentation is part of the oral thesis examination processes.

The Chair of the Examining Committee has responsibility for the conduct of the oral thesis examination, and has the discretion to exclude members of the Queen's community, and/or visitors, whose conduct disturbs the oral thesis examination processes.

Outcome categories of the oral thesis examination

The outcome of the oral thesis examination is based on the acceptability of both the thesis and the defence of the thesis at the oral thesis examination. The purpose of the oral thesis examination is to ascertain that the student is able to adequately present and defend the thesis and its underlying assumptions, methodology, results and conclusions in a manner consistent with the degree being sought.

At the oral thesis examination the examining committee will reach one of the 3 decisions listed below and record it on the "Thesis Examination Results" form. The 3 decisions are Passed, Referred or Failed.

i. **Passed** A thesis is passed if it is acceptable in its present form or pending minor revisions, and its defence at the oral thesis examination was satisfactory. A thesis may be passed if no substantive changes are required. Changes in the form of corrections of typographical or grammatical errors, minor modifications to the thesis, editorial revisions to improve clarity and revisions to clarify results, findings or conclusions, or the like, may be recommended with a thesis classified as passed. A list of the required revisions must be provided by the Chair to the student and the supervisor and the completion of the revisions must be certified to the School of Graduate Studies by the thesis supervisor or other designated person.

ii. **Referred** A thesis is referred if it is not acceptable in its present form or pending minor revisions, but could be acceptable pending major revisions. For example, a thesis will be referred if it requires substantive changes such as rewriting a chapter, reinterpretation, reanalysis or recalculation of data or findings, or additional research in order to attain acceptable standards of coherence and integrity in argument and presentation. The committee may decide to reconvene the examining committee and hold another oral thesis examination of the revised thesis.

The examining committee may also use the referred category if it determines that the oral thesis examination itself, either separate from or in conjunction with the written thesis, is unsatisfactory. This means that the student did not adequately present and defend the thesis and its underlying assumptions, methodology, results and conclusions in a manner consistent with the degree being sought. In such cases, a second oral thesis examination must be held, and the committee must then return a decision of either “passed” or “failed".

In all cases of referral, the nature of the revisions and/or additional work, and/or the deficiencies associated with the oral thesis examination, must be specified in writing by the Chair to avoid dispute or ambiguity. When outlining the revisions and/or additional work required, and/or the holding of a second oral thesis examination, the Chair must be as specific as possible. These comments will be passed on to the candidate in a letter from the School of Graduate Studies as revisions and/or improvements that must be met for the thesis to be reconsidered.

Any outlined revisions must be certified by the Chair or delegate as having been completed satisfactorily. Usually, this certification is delegated to at least two members of the Committee. In all cases of referral, the examining committee continues to exist until it has agreed that the thesis outcome is either passed or failed.

NOTES ON THE "REFERRED" CATEGORY

1. If the committee returns two or more votes for referred it may hold another examination after the candidate has carried out further research and/or rewritten the thesis, but normally not more than one year later.

2. Candidates have up to twelve months to complete revisions to their thesis but should be encouraged to do so as soon as possible. In cases where the thesis has to be re-submitted to the examining committee, and/or a second oral thesis examination has to be held, this has to be done no later than twelve months from the date of the first oral examination.

3. A thesis that has been defended by oral thesis examination can be submitted once more only in revised form. A candidate whose thesis and/or defence of the thesis at the second oral examination, does not satisfy the examining committee on the second submission will be failed (see iii. Failed, below. See also Withdrawal on Academic Grounds).

iii Failed: Failure can occur in 2 ways:

1. A thesis is failed if the document is unacceptable to the discipline even with substantive revisions. If the committee returns two or more votes of Failed on the basis of the document, this means that the committee recommends that the student be required to withdraw on academic grounds.

2. Failure may also result from an unacceptable second oral thesis examination, where the student was manifestly unable to adequately present and defend the thesis and its underlying assumptions, methodology, results and conclusions in a manner consistent with the degree being sought. A decision of Failed on the basis of the second oral thesis examination requires agreement by the majority (more than half) of the examining committee.

The student will be notified of the result immediately by the Chair of the committee and the decision confirmed in writing by the School of Graduate Studies.

Completion of degree requirements after the oral thesis examination

The School of Graduate Studies will notify the candidate of the successful completion of the degree requirements only after submission to the School by the candidate, of one electronic copy of the thesis, in PDF format, revised as recommended by the Thesis Examining Committee and finally approved by the supervisor/committee. Submission of the electronic copy is done via the "E-thesis" process. Exceptions to submission of an electronic copy of the thesis will be made by the School of Graduate Studies on a case-

by-case basis. If it is decided that no electronic copy can be submitted, at least one paper copy revised as recommended by the Thesis Examining Committee and finally approved by the supervisor/committee must be submitted to the School of Graduate Studies in fulfillment of degree requirements. Tuition fees will be charged up to and including the month of receipt of the final approved copy of the thesis.
Archiving/Binding of Theses Archival copy of thesis: The electronic copy of the final approved thesis copy submitted to the School will ultimately become the archival copy, to be placed in the archives of Theses Canada, Library and Archives Canada, and Queen's University archives. All format and pagination requirements must be met before the School of Graduate Studies accept the thesis in fulfillment of degree requirements.

Paper copies of thesis: At the time of submission for completion of degree requirements, the student may also submit up to two unbound paper copies of the thesis. The paper copy or copies will be bound by the School of Graduate Studies. The bound copy or copies will be returned to the student and to the thesis supervisor. Paper copies submitted for binding must be presented in order of pagination in separate envelopes.

Circulation of Theses

Any graduate student registering in a degree program at Queen's University involving research is advised that as a condition of being awarded the degree the recipient will be required to grant a license of partial copyright to the University and to the Library and Archives Canada for any thesis submitted as part of the degree program.

As soon as the thesis has been accepted in fulfillment of degree requirements by the School of Graduate Studies, the thesis is also automatically placed in Queen's University digital repository, QSpace (unless a restriction has been requested; see below). QSpace is the Queen's University Research and Learning Repository. Materials deposited in QSpace are instantly and permanently accessible worldwide through the Internet.

NOTES

1. This makes the thesis available for further research only. Publication for commercial purposes remains the sole right of the author.
2. If the thesis is restricted, this is to be indicated at the time of submission of the thesis to QSpace.
3. The terms and conditions of the university's licence agreements are available online as part of the "E-thesis" submission process. The student's signature is collected online. The university's licence agreement form, and all other required

forms, are also available from the website of the School of Graduate Studies. Students who wish to obtain legal advice concerning their subsequent rights are advised to do so prior to signing the agreements. Signing of the licence agreements is normally done after the content of the thesis has been delineated and the importance of copyright and/or patents is fully understood.

Request for Restriction of Thesis

The student may, at the time of submitting the thesis for completion of degree requirements, request that the thesis be restricted. If the restriction request is granted then the archival copy of the thesis will not be submitted to QSpace, Library and Archives Canada, or Proquest, and copies of the thesis held by the School of Graduate Studies will not be bound, microfilmed, or deposited in any library.

A restriction request will be granted where:

- (a) the student provides justifiable reasons for the request (such reasons may include the need to protect rights to commercial publication, to apply for a patent arising from the research, or to honour contractual obligations owed to third parties); and
- (b) the student's supervisor[1] confirms in writing that he or she assents to the restriction of the thesis.

In the event that the supervisor does not assent to the restriction of the thesis the restriction request may nonetheless be granted, unless the supervisor provides justifiable reasons for withholding his or her assent.

The decision to grant or deny the restriction request shall be made by the Associate Dean of the School of Graduate Studies.

If the restriction is granted the duration of the restriction shall be five (5) years, with immediate and automatic release to QSpace, Library and Archives Canada, and Proquest, at the end of the restriction period. Students may release their thesis from restriction earlier than 5 years by informing the School of Graduate Studies that the restriction may be lifted.

The author's name, thesis title and thesis abstract (also known as the thesis metadata) shall be available for all restricted theses through the usual online databases throughout the duration of the restriction. Under extraordinary circumstances, a student may contact the Dean of the School of Graduate Studies to request restriction of the metadata information for the duration of the thesis restriction. Confirmation must be received

from the student's supervisor that he/she agrees to the restriction of the metadata information before the School of Graduate Studies will process the metadata information restriction.

1 The supervisor is the faculty member designated as the supervisor at the time of the oral thesis examination. When a student has more than one supervisor, the supervisor(s) responsible for certifying that any required revisions have been made to the thesis after the oral thesis examination, shall be the supervisor(s) who must confirm agreement to the thesis restriction.

Absence of Examiners

In the event that a faculty member of an Examination Committee cannot attend the Oral Thesis Examination in person owing to illness or other unexpected absence, one of the following alternate arrangements should be made by the department/program Head/Program Director, or the Graduate Coordinator, or other delegated department/program faculty member:

- Determine if another faculty member can serve on the committee and attend the oral thesis examination at the scheduled meeting time (in the case of the Chair, any internal department/program member, or the internal-external).
- Determine if the examiner who cannot attend in person could participate in the oral thesis examination via teleconference or videoconference or other interactive process (e.g. SkypeTM). If so, these arrangements must be made by the Department/ Program.
- If the above two alternative modes of participation are not possible by the examiner, a comprehensive report including questions for the candidate and an indication of which outcome category the examiner would place the thesis in must be provided by that examiner to the Chairperson. The Chairperson will ask another member of the committee to read the report and pose the questions at the oral examination on the missing examiner's behalf.

For a Master's oral thesis examination, one of these appropriate steps can almost always be implemented entirely by the department/program. There may be cases where additional constraints may require the approval of the School of Graduate Studies (SGS), such as, if it is proposed that a faculty member who is not also a member of the SGS serve on the committee so that the examination may proceed as scheduled. For a Doctoral oral thesis examination, any changes to the committee structure or timing of the exam must be approved by the SGS.

In the case where none of these alternatives work, or if more than one member of the examination committee is cannot attend due to illness or other unexpected absence or if the student cannot attend due to illness or other unexpected absence, the oral thesis examination must be rescheduled. The examination must be rescheduled without delay and must be held as soon as possible.

Ph.D. CANDIDATES

a. Scheduling of the oral thesis examination: In preparation for the thesis examination, the Ph.D. candidate must submit one copy of the thesis to the School of Graduate Studies and one copy of the thesis to each member of the Thesis Examining Committee, including the Chair of the Committee (normally six for a doctoral program), not later than five weeks (twenty-five working days) before the tentative examination date. The copy submitted to the School must be submitted electronically in PDF format. The copy of the thesis submitted to the School must be accompanied by the form Ph.D. Oral Thesis Examination, duly completed with all details given, and signed by the supervisor(s) and Head of the Department (or delegate). The submission of this form follows the same deadlines as the distribution of the thesis copies, which is not later than five weeks (twenty-five working days) before the tentative examination date.

b. Membership and Convening of Thesis Examining Committees:

Thesis Examining Committees for all doctoral degree candidates include:

- Dean of the Graduate School (or delegate) – Chair.
- Head of the Department (or delegate)
- Supervisor
- At least one other member of the Department
- At least one faculty member from Queen's University from another Department
- An examiner from outside Queen's University

Ph.D. candidates' Thesis Examining Committee members are nominated by the Head of the Department and the student's supervisor. The authority for confirming membership of the committee and for confirming the date of the examination lies with the Dean of the School of Graduate Studies. Confirmation of these arrangements must be made, in writing, by the School of Graduate Studies to the members of the Thesis Examining Committee and to the student.

c. Examiner's reports: The thesis electronic report forms are forwarded from the School of Graduate Studies to the members of the Thesis Examining Committee. The thesis

reports must be submitted, in confidence, to the Chair of the Examining Committee at the School of Graduate Studies no later than one week or five working days before the tentative examination date. Each member of the Thesis Examining Committee, in making out the report, should indicate whether the candidate should be permitted to defend the thesis, and should substantiate any criticism with specific references.

d. Negative reports: If any two of the examiners' reports recommend that the thesis oral not proceed, the candidate, the supervisor and the Head of Department should be consulted by the Chair of the Examining Committee to see if they wish to proceed with the oral defence. The onus is on the candidate to make the decision to proceed or not. If the candidate agrees that the oral be postponed, the Chair must convey to the candidate, through the supervisor, the nature of the revisions to the thesis that are advised, and the candidate has the right to present the revised thesis at a later date. At the subsequent submission of the thesis, the oral defence must be held.

e. Attendance at the oral thesis examination by the external examiner: It is preferred that all examiners be physically present for the oral thesis examination. However, in certain extenuating circumstances, it is acceptable for the oral thesis examination to be scheduled so that the external examiner from outside of Queen's University could participate in the oral thesis examination remotely using some method of videoconference or teleconference. Arrangements for the use of remote access services must be made by the graduate department/program. Remote participation of the external examiner must be agreed to by the Department Head and/or Graduate Coordinator, and the student, and supervisor(s) of the student, being examined. This must be reported by the department/program on the Ph.D. Oral Thesis Examination Form, which must be submitted by the deadline and as outlined in Section a. above.

NOTES

1. The Ph.D. student being examined must be present in person at Queen's University for their oral thesis examination.
2. For the regulations on how to proceed with the oral thesis examination if one examiner cannot attend due to sudden illness etc., see Absence of Examiners above.

MASTER'S CANDIDATES

a. Scheduling of the oral thesis examination: Regulations concerning deadlines and all procedures for the convening of Thesis Examining Committees for all Master's degree candidates were established by the Divisions of the School of Graduate Studies and fall

under the jurisdiction of the faculty-based Graduate Councils. Students must consult with their home department to determine the administrative procedures they are to follow and the deadlines that must be met. These deadlines and procedures will be strictly enforced by the department.

b. Membership of Thesis Examining Committees: Rules on the membership of Thesis Examining Committees for all Master's degree candidates were established by the Divisions of the School of Graduate Studies and fall under the jurisdiction of the faculty-based Graduate Councils. Students must consult with their home department to determine the administrative procedures they are to follow. These rules will be strictly enforced by the department.

c. Examiner's reports: It is the responsibility of the student's home department to inform members of the examining committee of their procedures and deadlines for any pre-examination reports for Master's oral thesis examinations. These deadlines and procedures will be strictly enforced by the department.

d. Negative reports: If any two of the examiners' reports recommend that the Master's oral thesis examination not proceed, the candidate, the supervisor and the Head of Department should be consulted by the Chairperson of the Examining Committee to see if they wish to proceed with the oral defence. The School of Graduate Studies should be immediately notified whenever two or more examiners recommend that the thesis oral not proceed, and should be informed of the status of the scheduled oral thesis examination. The onus is on the candidate to make the decision to proceed or not. If the candidate agrees that the oral be postponed, the Chairperson must convey to the candidate, through the supervisor, the nature of the revisions to the thesis that are advised, and the candidate has the right to present the revised thesis at a later date. The School of Graduate Studies should be notified that an oral thesis examination has been postponed due to the submission of two negative reports. At the subsequent submission of the thesis, the oral defence must be held.

e. Certification of outcome of Masters' Oral Thesis Examination: The student's home department is responsible for submitting to the School of Graduate Studies the "Thesis Examination Results Form" duly signed at the time of the oral examination by the members of the examining committee, and clearly denoting the outcome category of the thesis (see above) and revisions required to prior to final submission for degree completion. This form must also denote the person or persons responsible for certifying to the School of Graduate Studies that all revisions have been completed. This task is normally carried out by the supervisor but could be designated to the supervisor and/or other members of the committee, in some cases.

TIME LIMITS FOR COMPLETION OF PROGRAMS

Effective for students admitted September 1, 2013 and all subsequent years:

Master's programs are designed and approved such that requirements can be completed within one year (3 terms) or two years (6 terms) of initial full-time registration in the program. Doctoral programs are designed and approved such that requirements can be completed within four years (12 terms) of initial full-time registration in the program. This standard timeframe for doctoral programs may not account for discipline-related (for example, required internships, archival research or fieldwork) or individual circumstances that can extend the time to completion. When circumstances are discipline-related, the Department/Program may grant to all doctoral students an extension to five years (15 terms), otherwise extensions may be granted to individual students by the Department/Program no later than two weeks prior to the end of term 13 of a PhD program. Extensions for Master's students may be granted by the Department/Program no later than two weeks prior to the end of term 4 or 7 of a one- or two-year Master's program, respectively. All extensions follow the Extension of Time Limits policy.

NOTE: The academic year is divided into 3 terms: Fall (September-December), Winter (January-April) and Summer (May-August). Each term is 4 months long.

Effective for students admitted prior to September 1, 2013:

The requirements for master's programs must be completed within five years from the time of initial registration in the department/program. The requirements for doctoral programs must be completed within seven years from the time of initial registration in the department/program. It should be noted that these specified periods are time LIMITS and are not indicative of normal program duration.

WITHDRAWAL ON ACADEMIC GROUNDS

Recommending Withdrawal on Academic Grounds

Any academic decision can be appealed by the student under the SGS General Regulation Appeals Against Academic Decisions. This regulation (Withdrawal on Academic Grounds) does not apply to the appeal of an academic decision but rather outlines the procedures whereby a graduate department or program recommends that a

student be required to withdraw on academic grounds, and the procedures and responsibilities for deciding on the outcome of this recommendation. Note that a recommendation under a., b., or c. below, may be appealed by the student under the SGS General Regulation Appeals Against Academic Decisions.

Some Graduate Department/Programs have separate procedures to be followed that would be enacted prior to making a recommendation under the procedures below.

Prior to making a recommendation under the procedures below, the faculty member(s), and/or Graduate Coordinator and/or Graduate Department/Program Head, and/or in the case of non-departmentalized faculties or schools, the Associate Dean responsible for the graduate program, shall meet with the student to discuss their academic situation, the possible recommendation of withdrawal, and the grounds for the recommendation. The student may invite a representative to the meeting. If the student intends to be accompanied by legal counsel, he or she must provide at least 48 hours notice to the department/program/faculty attendees who reserves the right to reschedule the meeting if notice is not given. If the student does not wish to attend the meeting, the student can submit a written statement. If the student does not respond to an invitation to attend the meeting, or does not make a written statement, the process will continue without the student's input.

The student shall be informed in writing when the Graduate Department/Program shall be making a recommendation of withdrawal to the Faculty Graduate Council, or, in the case of non-departmentalized faculties or schools, to the School of Graduate Studies, and shall be informed of the grounds for the recommendation.

Unsatisfactory academic performance by the student may lead to a recommendation that the student be required to withdraw. There are several circumstances that may lead to this recommendation and, as these differ in certain important respects, the procedures of appeal and review differ. The situations are dealt with separately in the following sections.

a. **Withdrawal due to Failure of a Primary Course**: In cases when a student does not achieve B- (B minus) in a primary course, for graduate programs in the departmentalized faculties, the Head or Graduate Coordinator of the Graduate Department/Program may recommend to the Chair of the Faculty Graduate Council that the student:

i. repeat the examination (or equivalent) within one year after the original examination (or equivalent), or

ii. repeat the course, or

iii. take a substitute course.

These regulations are also outlined in the SGS General Regulation, Course Work Requirements, b.

The student and Graduate Department/Program shall be informed of the decision of the Chair of the Faculty Graduate Council in writing by the School of Graduate Studies.

If recommendation i., ii. or iii. is not made or, if made, is not approved by the Chair of the Faculty Graduate Council, any student who fails to obtain the required standing in any primary course shall be required to withdraw. For graduate programs in the departmentalized faculties, the Head or Graduate Coordinator of the Graduate Department/Program shall recommend to the Chair of the Faculty Graduate Council that the student be required to withdraw due to failure of a primary course or courses.

The Faculty Graduate Council, or its duly empowered Chair or Associate Chair, shall examine the case to see that proper procedures were followed, and if this is ascertained, the Chair of the Faculty Graduate Council shall notify the School of Graduate Studies, who shall inform the student in writing of the Graduate Department/Program's recommendation and the confirmation of the recommendation by the Faculty Graduate Council. This letter will also inform the student of the relevant appeal procedure under SGS General Regulation Appeals Against Academic Decisions and will inform the student of the academic services provided by the Coordinator of Dispute Resolution Mechanisms and the Society of Graduate and Professional Students' Student Advisors.

Review of the Graduate Department/Program recommendation by the Faculty Graduate Council or its duly empowered Chair or Associate Chair, is limited to procedural matters and any extenuating circumstances only and does not entail assessing the academic decision itself.

If the case is evidently straightforward, it may be approved by the Chair/Associate Chair of the Faculty Graduate Council and then must be submitted for approval and action to School of Graduate Studies, and also reported back to Faculty Graduate Council. Otherwise, the Graduate Department/Program recommendation will be placed on the agenda for decision by Faculty Graduate Council at its next meeting.

If the Graduate Department/Program recommendation is taken to a meeting of the Faculty Graduate Council, the Chair of the Faculty Graduate Council shall inform the student that he or she may attend the meeting, with or without a representative or

advisor, and that he or she is entitled to present the case. If the student intends to be accompanied by legal counsel, he or she must provide at least 48 hours notice to the Chair of the Faculty Graduate Council who reserves the right to reschedule the discussion of the matter to another meeting of the Faculty Graduate Council, if notice is not given. If the student does not wish to attend the meeting of the Faculty Graduate Council, the student can submit a written response to the recommendation, for circulation to the Council and for discussion by the Council at the meeting. If the student does not respond to an invitation to attend the meeting, or does not make a written submission, the process will continue without the student's input.

All such Faculty Graduate Council decisions are subject to appeal, under the SGS General Regulation Appeals Against Academic Decisions. It is the responsibility of the Chair or Associate Chair of Faculty Graduate Council to represent Council and explain the decision to the SGS Academic Appeal Board, if/as required.

In the case of non-departmentalized faculties or schools, if recommendation i., ii., or iii. is not made to the School of Graduate Studies, the Associate Dean responsible for the graduate program shall recommend to the Graduate Committee that the student be required to withdraw from the program, and the Committee shall decide whether to accept this recommendation or not. The student shall be given fair notice in writing of the recommendation and the grounds upon which it is made. The student may attend the meeting at which the Graduate Committee considers the recommendation, alone or with a representative or advisor if he or she wishes, and has a right to present the case. If the student intends to be accompanied by legal counsel, he or she must provide at least 48 hours notice to the Associate Dean responsible for the graduate program, who reserves the right to reschedule the discussion of the matter to another meeting of the Graduate Committee if notice is not given. If the student does not wish to attend the meeting, the student can submit a written response to the recommendation, for circulation to the Committee and for discussion by the Committee at the meeting. If the student does not respond to an invitation to attend the meeting, or does not make a written submission, the process will continue without the student's input.

Review of the recommendation by the Graduate Committee is limited to procedural matters and any extenuating circumstances and does not entail an assessment of the academic decision itself.

If the Graduate Committee approves the recommendation of the Associate Dean, it shall report the case to the SGS, which shall inform the student of the Graduate Committee's decision.

All such Graduate Committee decisions are subject to appeal, under the SGS General Regulation Appeals Against Academic Decisions. It is the responsibility of the Chair of the Graduate Committee to represent the Committee and explain the decision to the SGS Academic Appeal Board, if/as required.

b. **Withdrawal due to decision of Failure by the Thesis Examining Committee**: The properly constituted Examining Committee of a thesis establishes the academic decision concerning the thesis and its defence. It, therefore, holds the same position with respect to the thesis as the instructor holds in relation to the marking of an examination or other test in a primary course. The academic decision of the Committee cannot be overturned.

At the oral thesis examination the examining committee will reach a decision of either Passed, Referred or Failed. See the General Regulation Thesis, Outcome categories of the oral thesis examination, for a description of each category.

If the Examining Committee has decided on the "Referred" decision, it may choose to reconvene the examining committee and hold another oral thesis examination of the revised thesis. In cases where the examining committee uses the "Referred" category because it determines that the oral thesis examination itself, either separate from or in conjunction with the written thesis, is unsatisfactory, a second oral thesis examination must be held.

In all cases of referral, the examining committee continues to exist until it has agreed that the thesis outcome is either passed or failed. The second submission of a thesis that was referred requires a final decision of pass or fail by the Examining Committee.

If the Examining Committee considers the student to have failed based on the written thesis or oral defence, the Examining Committee will recommend withdrawal from the program.

Appeal of a decision of the outcome category of Failed is through the SGS General Regulation Appeals Against Academic Decisions, Appeal of Thesis Examination Committee Decision.

NOTE: "Thesis" refers to the substantive, terminal research document of any research Master's degree, currently represented by the course number 899, or to the Doctoral Dissertation, the substantive, terminal research document of all Doctoral degrees, currently represented by the course number 999. The appeal of the grade of any Master's Essay, Report, or Project currently represented by the course number 898, falls under the SGS General Regulation Appeal of an Assigned Grade in a Graduate Course.

c. **Withdrawal on General Academic Grounds**: In addition to circumstances outlined in sections a. and b., there are other academic circumstances that could lead to a recommendation that the student be required to withdraw. To cite several examples: in the judgment of the supervisor or a supervisory committee the student may be making unsatisfactory progress in research; the student may have failed the comprehensive examination; there may have been marginal performance in seminars; preliminary drafts of chapters of the thesis may reveal an unsatisfactory standard of scholarship; or in the judgment of the supervisor or a supervisory committee or other Graduate Department/Program academic committee, the student's overall academic performance in coursework is not acceptable. For such cases and for graduate programs in the departmentalized faculties, the Graduate Department/Program shall recommend withdrawal to the Chair of the Faculty Graduate Council and shall inform the student in writing that such a recommendation is being made and the grounds for this recommendation.

The Graduate Department/Program recommendation shall be taken to a meeting of the Faculty Graduate Council. The Chair of the Faculty Graduate Council shall inform the student that he or she may attend the meeting, with or without a representative, and that he or she is entitled to present the case. If the student intends to be accompanied by legal counsel, he or she must provide at least 48 hours notice to the Chair of the Faculty Graduate Council, who reserves the right to reschedule the discussion of the matter to another meeting of the Faculty Graduate Council, if notice is not given. If the student does not wish to attend the meeting of the Faculty Graduate Council, the student can submit a written response to the recommendation, for circulation to the Council/ Committee and for discussion by the Council at the meeting. If the student does not respond to an invitation to attend the meeting, or does not make a written submission, the process will continue without the student's input.

Review of the Graduate Department/Program recommendation by the Faculty Graduate Council is limited to procedural matters and any extenuating circumstances and does not entail an assessment of the academic decision itself.

If the Faculty Graduate Council approves the recommendation of the Graduate Department/Program, the Chair of the Faculty Graduate Council shall report the case to the Dean of the School of Graduate Studies who shall notify the student in writing of the recommendation by the Faculty Graduate Council. This letter will also inform the student of the relevant appeal procedure under SGS General Regulation Appeals Against Academic Decisions and will inform the student of the academic services provided by the Coordinator of Dispute Resolution Mechanisms and the Society of Graduate and Professional Students' Student Advisors.

All such Faculty Graduate Council decisions are subject to appeal, under the SGS General Regulation Appeals Against Academic Decisions. It is the responsibility of the Chair or Associate Chair of Faculty Graduate Council to represent Council and explain the decision to the SGS Academic Appeal Board, if/as required.

In the case of non-departmentalized faculties or schools, in the case of withdrawal on general academic grounds, the Associate Dean responsible for the graduate program shall recommend to the Graduate Committee that the student be required to withdraw from the program, and the Committee shall decide whether to accept this recommendation or not. The student shall be given fair notice in writing of the recommendation and the grounds upon which it is made. The student may attend the meeting at which the Graduate Committee considers the recommendation, alone or with a representative or advisor if he or she wishes and has the right to present the case. If the student intends to be accompanied by legal counsel, he or she must provide at least 48 hours notice to the Associate Dean responsible for the graduate program, who reserves the right to reschedule the discussion of the matter to another meeting of the Graduate Committee if notice is not given. If the student does not wish to attend the meeting, the student can submit a written response to the recommendation, for circulation to the Committee and for discussion by the Committee at the meeting. If the student does not respond to an invitation to attend the meeting, or does not make a written submission, the process will continue without the student's input.

Review of the recommendation by the Graduate Committee is limited to procedural matters and any extenuating circumstances and does not entail an assessment of the academic decision itself.

If the Graduate Committee approves the recommendation of the Associate Dean, it shall report the case to the SGS, which shall inform the student of the Graduate Committee's decision.

All such Graduate Committee decisions are subject to appeal, under the SGS General Regulation Appeals Against Academic Decisions. It is the responsibility of the Chair of the Graduate Committee to represent the Committee and explain the decision to the SGS Academic Appeal Board, if/as required.

PROGRAMS OF STUDY

LINKS TO PAGES IN THIS SECTION

- Aging & Health
- Anatomy & Cell Biology
- Applied Sustainability
- Art Conservation
- Art History
- Arts Leadership & Arts Management
- Astronomy & Astrophysics
- Biochemistry
- Biology
- Biomedical & Molecular Sciences
- Biomedical Engineering
- Biomedical Informatics
- Biostatistics
- Chemical Engineering
- Chemistry
- Civil Engineering
- Classics
- Computational Science & Engineering
- Computing
- Cultural Studies
- Earth & Energy Resources Leadership
- Economics
- Education
- Electrical & Computer Engineering
- English Language & Literature
- Environmental Studies
- French Studies
- Gender Studies
- GeoEngineering
- Geography & Planning
- Geological Sciences & Geological Engineering
- German Language & Literature
- Global Development Studies
- Health Quality
- History
- Industrial Relations
- Kinesiology & Health Studies
- Law
- Management - School of Business
- Mathematics & Statistics
- MD PhD MD Master's
- Mechanical & Materials Engineering
- Medical Sciences
- Microbiology & Immunology
- Mining Engineering
- Neuroscience
- Nursing
- Occupational Therapy
- Pathology & Molecular Medicine
- Pharmaceutical & Healthcare Management and Innovation
- Pharmacology & Toxicology
- Philosophy
- Physical Therapy
- Physics, Engineering Physics & Astronomy
- Physiology
- Policy Studies (Public Administration)
- Protein Function Discovery
- Political Studies
- Psychology
- Public Health Sciences
- Rehabilitation & Health Leadership
- Rehabilitation Science
- Religious Studies
- Sociology
- Statistics
- Translational Medicine
- Urban & Regional Planning

AGING AND HEALTH

Director
Finlayson, M.

Associate Director (Research and Post-Professional Programs)
Norman, K.E.

Faculty
Auais, M., Collins, P., DePaul, V., Deshpande, N., Donnelly, C., Ghahari, S., Kessler, D., Lysaght, R., Medves, J., Miller, J., Pedlar, D., Puxty, J., Trothen, T., Woo, K.

Associated Schools, Centres and Departments
Rehabilitation Therapy, Nursing, Geography and Planning, Medicine, French Studies, Religious Studies, Canadian Institute for Military and Veteran Health, International Centre for the Advancement of Community Based Rehabilitation, Canadian Frailty Network

Please see the Aging and Health website for more details about faculty and associated schools, centres and departments: http://rehab.queensu.ca/academic-programs/aghe

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General Information

The GDip, MSc and PhD programs in Aging and Heath are tailored to meet the evolving needs of today's student. These programs are designed to be completed at a distance by working professionals. The programs are offered full-time, through a blended format of online learning and short onsite sessions. Participants will enjoy the professional networking and experiential opportunities of an onsite program with the benefits of distance learning flexibility.

Program Objectives

Queen's University Graduate Diploma (GDip), Master of Science (MSc) and Doctorate (PhD) in Aging and Health provide participants with a comprehensive understanding of aging, with a focus on health and healthy living. Students will develop multi-disciplinary knowledge of individual aging processes, the effect of aging on social systems, and the policies needed to support healthy aging.

Programs of Study

The Graduate Diploma (GDip)

The GDip is completed over 8 continuous months. Its requirements include 2 core courses (AGHE 802 and AGHE 811) plus 3 electives.

Students who successfully complete the GDip in Aging and Health can be considered for advanced standing in the MSc program. Those wishing to enter the MSc program following completion of the GDip program must apply directly for entry into the MSc program (and pay the applicable application fee). In order to be accepted with advanced standing, the application must be made to the MSc program within 5 years of completion of the GDip program. Once accepted, the student will complete two additional courses, plus a project course (AGHE 898), provided there have been no substantive changes in the MSc program requirements in the intervening years.

Master of Science (MSc)

The MSc is completed over 12 continuous months. Its requirements include 3 core courses (AGHE 800, AGHE 802, and AGHE 811), plus 4 electives, and the completion of a project course (AGHE 898).

Transfer options between GDip and MSc programs

Students who enter the GDip program may request to transfer to the MSc program. Such requests will be granted if the student is admissible to the MSc program and if the student has made the request early enough to be able to complete the project course (AGHE 898) in the same year. The last date for this transfer will be announced in late August of each year.

Students who enter the MSc program may request to transfer to the GDip program. Whether they complete in 8 months or 12 months will depend on their course selection and completion.

Whether a student wishes to transfer to the MSc from the GDip, or the GDip to the MSc, they must make an application to the respective program and pay the application fee, before a determination of admissibility by the program can be made.

Doctor of Philosophy (PhD)

The PhD is completed over 48 months. Its requirements include 4 courses (2 electives plus AGHE 901 and AGHE 903), as well as the completion of a Comprehensive Examination and Dissertation.

Admission eligibility

For the GDip or MSc programs, a minimum of B+ average from any four year undergraduate degree program or equivalent.

For admission to the PhD, applicants must have a master's degree in a related discipline with a minimum of B+ average.

For more information on admission requirements: https://rehab.queensu.ca/academic-programs/aghe/admission

Financial Assistance

The Graduate Diploma (GDip) and Master of Science (MSc)

The MSc and GDip students are not funding-eligible.

Doctor of Philosophy (PhD)

PhD students are expected to apply to the external granting agencies for fellowships available to them. Thereafter they will be considered, without further application, for Queen's Fellowships. Graduate students may receive support from grants held by members of faculty, or from departmental funds. Teaching assistantships are available to suitably qualified candidates.

ANATOMY AND CELL BIOLOGY

CHANGES TO THIS PROGRAM, AS OF SEPTEMBER 2014:

Effective September 2014, the graduate programs in Anatomy and Cell Biology become part of the Department of Biomedical and Molecular Sciences. There is no new admission to Anatomy and Cell Biology effective September 2014.

Graduate students registered in Anatomy and Cell Biology prior to September 2014 would normally be expected to follow the programs of study and degree requirements listed below.

For more information, go to: Department of Biomedical and Molecular Sciences section of this calendar.

Master's Programs

Pattern I: Master of Science (M.Sc.) in Anatomy and Cell Biology

The Master of Science (M.Sc.) in Anatomy and Cell Biology consists of a research thesis and course work of which 1.5 of the required 2 credits must be selected from graduate courses that are not combined with undergraduate courses or seminars and are exclusive of a research project and thesis.

Pattern II: Master of Science in Anatomical Sciences (M.Sc. [A.S.])

The Master of Science in Anatomical Sciences is a 16-month intensive program of courses and practicum focused on educating and training students to teach and design anatomical curriculum in health sciences. This program is structured around three basic pillars of post-secondary education: Content, Pedagogical and Inquiry Competence. The students are provided with in-depth courses in the four anatomical disciplines, together with courses on teaching and learning in higher education (one full and seven half advanced courses). The practicum provides the students with hands-on experience in human gross anatomy dissection, techniques in specimen preparation, histology techniques, electronic media, digital imaging technology for anatomical sciences, and classroom (both large and small) and laboratory teaching in undergraduate and graduate courses. The students also complete an independent research study with project topics selected from areas in Anatomy and Cell Biology, Pedagogy in

Anatomical Sciences or Instructional Technology. Students are admitted annually on September 1.

Doctor of Philosophy in Anatomy and Cell Biology

This a research degree requiring approximately three years of study and supervised research if subsequent to a Master of Science degree in anatomy or a related discipline, or about 4 years if the student is accepted directly into the Ph.D. program or carries out a `mini-masters`. The number of courses prescribed depends on the student's background in relation to the chosen field of study. The research and thesis will normally take up at least two thirds of the student's full-time study requirements. All doctoral students are required to take a two-part comprehensive examination within the first eighteen months of the program.

Direct Admission to Ph.D.

Candidates with outstanding undergraduate academic record may be admitted directly into the PhD program.

Mini -Master's Defense

A student registered in the M.Sc. program with an excellent academic record and exceptional ability to perform research, may be accelerated into a Ph.D. program upon recommendation of the Anatomy and Cell Biology program and following submission and defense of a 'mini-master's' thesis. This is an abbreviated write-up of the candidate`s research carried out to date as well as a general plan to complete the Ph.D. research. It is recommended that a 'mini-master's' should be considered early in the program for students performing at excellent levels.

APPLIED SUSTAINABILITY

The collaborative specialization in Applied Sustainability offers M.Eng. and M.A.Sc. students training in a multidisciplinary environment spanning engineering departments and linking with researchers in the School of Policy Studies. The collaborative specialization allows students to undertake cutting-edge research under the supervision of internationally recognized investigators in diverse Applied Sustainability fields, and provides opportunities for multidisciplinary research and learning that will be invaluable for the graduate student's career development. Areas of research interest include: 1) Applied Sustainability and Energy Technology, 2) Applied Sustainability and Fresh Water Systems, 3) Applied Sustainability and Resource Management and 4) Applied Sustainability and Policy Studies.

Building on the applied sustainability strategic theme of the Faculty of Engineering and Applied Science, the objective of the collaborative specialization is to expose students to the implementation of sustainable engineering solutions within the context of broader sustainability theory. To do this properly, engineering students must not only advance their technical education, but must gain insights into how public policy impacts on the success of engineering solutions to multidisciplinary sustainability problems.

The collaborative specialization available to Master's students associated with the six member programs at Queen's University.

Application Procedure

Applicants are accepted under the general regulations of the School of Graduate Studies and of the member graduate programs.

The collaborative specialization is offered at only the Master's level. For further details, interested students are encouraged to contact the representative from the department that is best aligned with their current research interest:

- **Chemical Engineering:** Prof. Brant Peppley
- **Civil Engineering:** Prof. Bruce Anderson
- **Electrical and Computer Engineering:** Prof. Alireza Bakhshai
- **Geological Sciences and Geological Engineering:** Prof. Gema Olivo
- **Mechanical and Materials Engineering:** Prof. Andrew Pollard
- **Mining Engineering:** Prof. Jamie.Archibald

Program of Study

The collaborative specialization is available to eligible, approved Master's students associated with the six member programs at Queen's University.

Students will enroll in their respective home departments and must meet the program requirements of their home departments.

There will be two mandatory core courses students in the collaborative specialization must take: CMAS-801* Topics in Applied Sustainability and CMAS-897* Applied Sustainability Seminar Series.

M.A.Sc. students take four courses plus a thesis, plus the seminar series. M.Eng. students take eight courses, one of which may be a project course, plus the seminar series.

Upon graduation, students will have "with specialization in Applied Sustainability" added to their official transcripts.

Financial Support

Full-time students are encouraged to seek external financial support and are encouraged to apply for NSERC and OGS graduate scholarships. Fellowships and teaching assistantships are available through the University and students are automatically considered for these, on a competitive basis, upon admission to one of the member programs.

ART CONSERVATION

Head
Schwartz, J.

Director
Hill, R.

Coordinator of Graduate Studies
Murray, A., Smithen, P.

Associate Professor
Murray, A.

Assistant Professor
Hill, R., Smithen, P.

Cross-Appointed Faculty
Bevan, G.

Adjunct Professor
Burns, T., Graham, F., Klempan, B., Paul, N., Shurvell, H.F. (Gus), Spirydowicz, K., Waller, R., Williams, S.

Departmental Facilities

The Department of Art History and Art Conservation offers, at the graduate level, the M.A.C. in Art Conservation, and the Ph.D. and the M.A. in Art History. At the undergraduate level, the Department offers the B.A.(Hons.) degree in Art History.

The art conservation program is an interdisciplinary program that combines academic study and practical work with cultural property in the laboratory and in the museum, art gallery, archive or library. To this end, specially designed laboratories fitted with up to date equipment for a wide range of restoration and conservation activities are annexed to the Agnes Etherington Art Centre. In addition, extensive use is made of the facilities available in the Art Centre, Queen's University Archives, Stauffer Library Special Collections, and collaborating science and engineering departments.

Liaison is also maintained with other Departments in the Humanities, particularly Classics, English, History; with Languages, Literature and Culture, and with the programs in Canadian and in Medieval, Renaissance and Women's studies, so that graduate students may take additional courses in such fields if needed. In the Sciences, interdepartmental liaison is maintained particularly with Chemistry and Physics, which are of interest to the art conservation program.

The Art Library located in the Stauffer Library comprises some 60,000 items (including exhibition catalogues) on all aspects of art history and on art technology, restoration, conservation and exhibition, supplemented by extensive electronic journals and other digital library holdings. The Department holds some 200,000 photographs and 220,000 slides of architecture, painting and sculpture, art technology, restoration, and conservation. Extensive Canadian archival material on art and architecture is also available elsewhere in Stauffer Library and the University Archives.

The Agnes Etherington Art Centre, which has a close working relationship with the Department, offers outstanding collections in select areas of Western and non-Western art for examination and research. Part of the permanent collection is on display at all times; the rest, which is in storage, is available to graduate students by appointment.

Financial Assistance

Apart from national and provincial awards, Graduate Awards may be made by the Department on the basis of merit. Teaching assistantships may be available to students in both the art conservation and art history programs.

Master of Art Conservation

Applicants are accepted under the general regulations of the School of Graduate Studies and should have a four year honours degree or equivalent in the humanities, sciences, or engineering, with a minimum B+ average (or equivalent).

Specific Requirements

- One full-year, post-secondary course in fine art studio or workshop practice (or equivalent), for treatment programs.
- One full-year university course in general chemistry and a one-term university course in organic chemistry, all courses preferably with a laboratory component.

- Applicants with an undergraduate degree in the humanities must have a minimum of five full-year courses in art history, ethnology, archaeology, or equivalent.
- Applicants with a science or engineering undergraduate degree must have a minimum of two full-year courses in art history, ethnology, archaeology, or equivalent.
- Proficiency in English. Applicants whose first language is not English or who have not recently studied for at least one complete year at a post-secondary institution where English is the official language of instruction, will be required to pass an English language proficiency test.
- Good visual sensitivity and manual skills.
- Familiarity with digital imaging techniques.
- Working knowledge of at least one second language is recommended.
- Experience in conservation is highly recommended.

These are regarded as minimum requirements; preference will be given to candidates who exceed these minimum requirements in any or all of the required subject areas. For example, studies in Museology or Library Science or previous conservation experience would be considered as assets. A working knowledge (reading, writing, speaking) of at least one second language is highly recommended for all applicants. A familiarity with the operation of a DSLR camera is highly recommended.

Exceptions

In the case of exceptional applicants holding a three year B.A., suitable subsequent experience in the field of conservation may be regarded as equivalent qualification.

Admission

A limited number of places are available each year. Applicants will be interviewed by the faculty at which time they will be asked to present a portfolio of their work. They also may be required to take an oral, written or practical examination to test aptitude, colour discrimination and manual coordination.

Programs of Study

Treatment options - PATTERN II

Two-year program includes:

- Four terms of theoretical and practical study on campus: advanced lecture courses, laboratory work in the conservation of heritage objects, and a research project (ARTC-898);
- Two twelve-week, off-campus summer internships.

Students must choose to specialize in one of the following:

- Conservation of paintings;
- Conservation of artifacts;
- Conservation of paper objects.

Research options - PATTERN I

Programs include:

a. Four advanced lecture courses, original research, and a thesis (ARTC-899), with no practical treatment component. This mid-career program is open to conservators with a minimum of five years conservation experience. Research will be individually designed to suit the background and interests of students and faculty.
b. Two-year program is available for science and engineering graduates to carry out research in conservation science.

Examinations

Examinations will be held for each course. These may be written and/or oral, or in the form of course work evaluation depending on circumstances pertaining to the content of the course. Students must complete all courses scheduled for the first year before being permitted to proceed to the second year of the program.

Pattern I students must defend their thesis (ARTC-899) in an oral thesis examination. The Thesis Examination Committee for Pattern I Master's students in the Art Conservation Program shall comprise at least the following members:

- Chair of Committee: Head of the Department (or Head's Delegate) (may be from outside Department)
- Supervisor(s)
- At least one other faculty member, who may be:
    - from the department; OR
    - external to the department; OR
    - in exceptional circumstances, external to Queen's University.

Course Organization

Courses within the treatment oriented M.A.C. programs are arranged in eight series as follows:

- ARTC-80- General courses to be taken by all students in treatment oriented streams
- ARTC-81- History, Technology and Conservation of Artifacts
- ARTC-82- History, Technology and Conservation of Paintings
- ARTC-83- History, Technology and Conservation of Paper Objects
- ARTC-85- Artifact Conservation Practice
- ARTC-86- Paintings Conservation Practice
- ARTC-87- Paper Objects Conservation Practice
- ARTC-89- Thesis or Research Project

The order of offering courses may vary but students will be able to take all the required courses for graduation within a two year period.

General Requirements

During the two years of the program all students in the treatment oriented streams are required to take all courses offered in the ARTC-801 to 809 series and one History, Technology and Conservation course outside the student's area of expertise.

Specializations

1. Artifacts: In addition to the General Courses, students in the Artifacts stream are required to take: the three 81- courses in History, Technology and Conservation of Artifacts series and the 85- Artifacts Conservation Practice series.
2. Paintings: In addition to the General Courses students in the Paintings stream are required to take 82- as well as the 86- Paintings Conservation Practice series.
3. Paper Objects: In addition to the General Courses, students in the Paper Objects stream are required to take: the three 83- courses in History, Technology and Conservation of Paper Objects series and the 87- Paper Objects Conservation Practice series.
4. Research Students in the Pattern I Research Program will pursue a program of study individually suited to the candidate's background and area of specialization. Students may be directed to take one or more courses in other departments. Also, the program and research topic will be agreed upon prior to admission to the program.

Auditing of Courses

With the permission of the course instructor and of the supervisor of his or her area of specialization, students may be allowed to audit courses in History, Technology and Conservation in the other areas of specialization, (81-, 82-, 83- series). This is intended to broaden the student's understanding of problems and methods across the whole field of conservation.

Program Related Costs

Students will incur the following costs over the two years of the Program:
- Required texts will cost in the range of $800.
- Internship costs may vary, depending on the student’s choice of location.
- Purchase of a personal computer is optional but highly recommended.
-The research project (ARTC-898) may cost approximately $250.

ART HISTORY

Head
Schwartz, J.

Coordinator of Graduate Studies
Morehead, A.

Professor
Bailey, G.[2], D'Elia, U., Dickey, S.[3], Hoeniger, C., Jessup, L., Schwartz, J., Spronk, R.

Associate Professor
Morehead, A.,Reeve, M.,Vorano, N.

Assistant Professor
Kennedy, J., Romba, K., Russell-Corbett, J.

Professor Emeritus
Du Prey, P., Finley, G.E., Helland, J.

Adjunct Professor
Allen, J.[1], Boutilier, A., Smith, S.E.K., Sullivan, P.

Adjunct Assistant Professor
Coutre, J.N., Kerr, S.

Cross-Appointed Associate Professor
Bevan, G., Lord, S.

Cross-Appointed Assistant Professor
Robinson, D.

1 - Director/Curator of the Agnes Etherington Art Centre
2 - Bader Chair in Southern Baroque Art
3 - Bader Chair in Northern Baroque Art

Departmental Facilities

The M.A. and Ph.D. programs in Art History offer advanced training in the study of visual and material culture from the Middle Ages to the present. The Department is strongly committed to the training of graduate students in a variety of approaches, methodologies, and issues including the study of art, science and technology; gender, class and society; material culture and object-based analysis; museums, collecting and cultural policy; word and image studies, and post-colonial analysis.

The Department of Art History and Art Conservation, offers, at the graduate level, in addition to the Ph.D. and the M.A. in Art History, the M.A.C. in Art Conservation. Recognizing the increasing need for art historians to know more about the history of technique, restoration, and the relation of conservation to art history, the Department has developed a number of advanced courses in the area of interaction between conservation and art history. It is uniquely equipped to do so with the art conservation program and its laboratories on campus and with several art historians and conservators actively doing research in the area. Ph.D. students interested in the overlap between the two disciplines have the option of carrying out a Ph.D. in Art History focusing on the field, Studies in Art History and Art Conservation. The interaction between art history and the museum is also addressed in advanced courses in the Department, which offers course credit to graduate students in art history for a practicum for M.A. students at the Agnes Etherington Art Centre and a directed research program for Ph.D. students in collaboration with the Art Gallery of Ontario.

Liaison is also maintained with other Departments in the Humanities, particularly Classics, English, History, the Languages, Gender Studies, and Cultural Studies, so that graduate students may take additional courses in such fields if needed. In the Sciences, interdepartmental liaison is maintained particularly with Chemistry and Physics, which are of interest to the art conservation program.

The Art Library located in the Stauffer Library comprises some 60,000 items (including exhibition catalogues) on all aspects of art history and on art technology, restoration, conservation and exhibition, supplemented by microfiche and microfilm facilities. The Department holds some 400,000 images of architecture, painting and sculpture, art technology, restoration, and conservation, in digital and traditional formats. Vast digital collections of texts and images are also available through the Queen's libraries. Graduate students also have access to the computers, printers, scanners, and software necessary for textual and visual research in the Winifred Ross Multimedia Room. Extensive Canadian archival material on art and architecture is also available elsewhere in Stauffer Library and the University Archives. The library also has rich holdings of rare books, including an unusually strong collection of European architectural treatises.

The Agnes Etherington Art Centre, which has a close working relationship with the Department, offers outstanding collections of West African, Inuit, First Nations, European, and Canadian art, including costumes, quilts, and decorative arts, and runs a vital exhibition schedule of contemporary art. Part of the permanent collection is on display at all times; the rest, which is in storage, is available to graduate students by appointment. The Canadian Heritage Information Network (CHIN), which permits access to information about the holdings of public collections across the country, is also accessible to graduate students through the Art Centre.

Financial Assistance

Apart from national and provincial awards, Graduate Awards may be made by the Department on the basis of merit. Teaching assistantships may be available to students in both the art conservation and art history programs. At the M.A. level, the Joseph S. Stauffer Foundation Scholarship is available to a student entering the second year of the Master's program in Art History with evidence of intent to write a thesis on a topic in Canadian Art or Architecture. At the Ph.D. level, several Bader Fellowships, valued up to $30,000 each, will be awarded each year for research in Europe.

Programs of Study

Master of Arts - Art History

Admissions

Applicants are accepted under the general regulations of the School of Graduate Studies.

Admission to the M.A. program is limited. Applicants are normally recommended for admission by the Faculty Committee on Graduate Studies. This Committee may direct the applicant to take certain secondary courses complementary to the Degree program, if this is deemed advisable in the light of the needs of the individual student. Admission is normally limited to students with a degree in Art History and a minimum strong upper second class standing in the upper years of their B.A. program.

Language Requirements

Sufficient reading knowledge of a second language (French, German, or Italian) is required. Depending upon the areas of concentration of the individual student, reading

knowledge of a third language may also be required. Proficiency examinations are administered within the Department.

Degree Requirements

The requirements are set according to the General Regulations specified in the calendar of the School of Graduate Studies (Master's Degree Program). Two program options are offered. In either option courses must be chosen in consultation with the Coordinator of Graduate Studies and the instructors concerned;

- Option A (Pattern I) -- Four term-length courses and a Master's Thesis (ARTH-899) (20-25,000 words) (9.0 credit units);
- Option B (Pattern II) -- Six term-length courses and ARTH-898 Advanced Research Paper (10-12,000 words) (3.0 credit units).

The examination procedure for the Thesis, including the oral examination, conform to departmental and SGS regulations (Thesis).

The Advanced Research Paper will be read and marked Pass/Fail by two readers in addition to the supervisor.

In both options the Thesis or Advanced Research Paper topic must be chosen in consultation with the candidate's supervisor, who will be appointed on the advice of the Coordinator of Graduate Studies. After preliminary research, a Thesis Proposal or Advanced Research Paper proposal written according to departmental guidelines, must be approved by the Faculty Committee on Graduate Studies before preparation of the Thesis or Advanced Research Paper can begin. The outside parameter indicated in Option A would normally only apply to the type of thesis that is accompanied by substantial appendices. The Master's program (both Option A and B) is normally expected to take two years. It can be completed in sixteen months, if work on the thesis topic is begun soon after the student registers.

Doctor of Philosophy

Admissions

Applicants are accepted under the general regulations of the School of Graduate Studies. Admission to the Ph.D. is normally limited to applicants with an Honours B.A., or its equivalent, and an M.A., the latter with first class standing in all primary courses. Normally both these degrees should be in Art History, but allowance may be made for those candidates one of whose degrees is in Art History but whose other degree is in a

related subject (such as Art Conservation, Classics, Fine Art, or History). In all cases, the Graduate Committee of the Department will examine the record of courses taken by applicants in both their graduate and undergraduate programs in order to establish that they have sufficient preparation in the History of Art. The Committee will request that deficiencies in preparation be made up in a first year at Preparatory Status. The Graduate Committee will also ask applicants to submit evidence of advanced research skills and the ability to communicate the results in written form.

Language Requirements

Evidence shall be required of a reading knowledge of those languages other than English which are deemed necessary for a candidate's particular field of study, as determined by the Art History Graduate Committee. Proof of such ability can be established by language tests previously taken at the M.A. level, or by appropriate coursework, and is required in at least one second language at the time or application.

Degree Requirements

The requirements are set according to the General Regulations specified in the calendar of the School of Graduate Studies (Doctoral Degree Programs). Students are required to complete the following sequence:

- **Year 1**
  Three term-length courses in Art History during the first two terms, one of which must be taken with the supervisor, and one of which must be taken outside the area of specialization.
- **Year 2**
  - Option A: The Field Examinations are normally taken within eight months of completion of the three courses required in the first two terms. They consist of two written Field Essays, credited as ARTH-904 and ARTH-905, completed by an Oral Examination.
  - Option B: The candidate will write one Field Essay, completed by an Oral Examination (ARTH-906*), and complete a substantial internship at a museum or other cultural institution (ARTH-907).

Upon the satisfactory completion of either Option A or Option B, the candidate will commence a special Research Seminar, reading with a supervisor in the area of an intended thesis in order to prepare a thesis proposal. This seminar is credited as ARTH-908*.

Thesis

A thesis proposal will be presented to the Graduate Committee upon completion of the above requirements (including Language Requirement). After the proposal is approved, thesis research and writing should commence.

Travel

It should be understood that research for most Ph.D. theses will involve travel and even extended residence outside Kingston. Students are reminded that several Bader Fellowships are available each year to Ph.D. candidates in art history for thesis research in Europe. The School of Graduate Studies awards Travel Grants for Doctoral Field Research in an annual competition.

ARTS MANAGEMENT GRADUATE DIPLOMA AND THE MASTER OF ARTS IN ARTS LEADERSHIP

Program Overview

Queen's University Dan School of Drama and Music in partnership with the Isabel Bader Centre for the Performing Arts have developed the Arts Management Graduate Diploma and the Master of Arts in Arts Leadership for students and working professionals who have the passion and acumen for the arts and are seeking opportunities in arts management and leadership. The focus is on developing 21st century leadership and management capabilities.

The Arts Management Graduate Diploma and the M.A. in Arts Leadership are designed to provide students with a multifaceted understanding of the arts and their environment, and the dexterity of management and leadership skills required. Both the Graduate Diploma and the Master's program course curricula provide students with opportunities for concrete experience, reflective observation, research skills, group work, and field work with live sites, abstract conceptualization and active experimentation. Students will be exposed to industry leaders and contemporary best practices in the arts and cultural industries.

Graduate Diploma students will gain a foundation of knowledge in strategic planning, arts marketing, philanthropy, governance and financial and management accounting. They will have the opportunity of meeting with top practitioners in the field, and applying their theoretical knowledge through assignments, field studies and in-class simulations.

Master's students will gain a foundation of knowledge of strategic thinking and planning, cultural policy, arts marketing, arts philanthropy, finance, contract negotiations and labour law, and leadership. Master's students will have a transformational applied learning opportunity through assignments, in-class simulations, a one term practicum and a capstone project. Through their practicum and final capstone project, the Master's students will gain practical experience and apply their theoretical knowledge, understand the role of leadership and stakeholders in a multi-faceted industry, observe and analyze problems and solutions in a professional arts setting, interact with arts colleagues in a professional environment and in a wide range of activities, and gain insight into their future role and career interests in the arts.

Admission Requirements

The admission requirements for the Arts Management Graduate Diploma and the M.A. in Arts Leadership are:

- An honours baccalaureate degree from a recognized university, preferably in the creative arts (e.g. music, drama, film, art) or a related field. The minimum acceptable average for admissions to these programs is B+.
- Students applying from outside of North America whose native language is not English are required to submit TOEFL scores.
- Consideration will be given to highly motivated individuals with documented relevant professional experience who do not meet the B+ requirement.

Applications will be welcome from qualified under-represented groups.

Program Structures and Requirements

Students may apply for direct entry to either the Arts Management Graduate Diploma or the M.A. in Arts Leadership. Students may also apply to enter the M.A. in Arts Leadership after successful completion of the Arts Management Graduate Diploma. Applicants must normally apply for admission to the M.A. in Arts Leadership within five years of completing the Arts Management Graduate Diploma in order to apply courses completed for the Arts Management Graduate Diploma to meet requirements of the M.A. in Arts Leadership. The Arts Management Graduate Diploma may also serve as an exit point for those who are enrolled in the Master's program and have completed the four courses that are required for the Diploma but decide not to complete the full Master's course work including electives and the final capstone project.

The Arts Management Graduate Diploma is a 4-month program that will commence in May. The program consist of 12 units (5 courses) with the majority of the courses scheduled to be delivered during an on-campus residential session in May through August; one on-line course on financial literacy must also be completed during this same time-frame.

Graduate Diploma students have the option of completing the Master's program, and Master's program students may receive the Graduate Diploma if they withdraw after successful completion of the summer term courses (i.e. The GDip requirements).

The Master of Arts in Arts Leadership is 12 month full-time program that will commence in May and conclude the following April. The program will consist of 24

units with the majority of the courses scheduled to be delivered during on-campus residential sessions in May through August. During the Fall semester, Masters students will have the option to study on or off-campus by accessing electives that are delivered on-line or on-campus. During the Winter semester, Masters students will be required to complete a practicum and capstone project on an industry organization. Placements would be facilitated through Genovese Vanderhoof and Associates who are experienced in arts intern placements throughout North America.

Graduate Diploma

Summer Term (May - August)

Core 12 Units:

- 3.0 units - ARTL- 801* Arts Marketing
- 3.0 units - ARTL-802* Arts Philanthropy
- 3.0 units - Financial Literacy for Non-Financial Managers (MIR-889)
- 1.5 units - ARTL-805 Strategic Planning
- 1.5 units - ARTL-806 Strategic Leadership & Governance

Skills seminars (non-credit) with industry leaders will be held throughout the program.

Master's Program

The core courses are taken in the Summer term. In the Fall term, students have the opportunity to focus on leadership in a specific art form (e.g. theatre administration, entrepreneurship, cultural policy) or a specific area (e.g. labour relations). In the Winter term, students' practicum placements take into consideration with their desire to work in a specific art form or area.

Summer Term (May - August) – laddered from the Graduate Diploma

Core 12 Units:

- 3.0 units - ARTL-801* Arts Marketing
- 3.0 units - ARTL-802* Arts Philanthropy
- 3.0 units - Financial Literacy for Non-Financial Managers (MIR-889)
- 1.5 units - ARTL-805 Strategic Planning
- 1.5 units - ARTL-806 Strategic Leadership & Governance

Fall Term (September – December)

Core 3 Units:

- 1.5 units - ARTL-807 Cultural Policy
- 1.5 units - ARTL-808 Contract Negotiations

Electives - 3 Units from the following courses:

- 3.0 units - ARTL-820* Theatre Administration (DRAM 448)
- 3.0 units - ARTL-814* Creative Entrepreneurship

Or a combination of three of the following existing MIR seminar courses (total MIR course offering will vary year to year) complemented by Arts industry leaders/speakers in Skills Development Seminars:

- 1.0 units - MIR 802 Change Management Skills
- 1.0 units - MIR 803 Quantitative Skills
- 1.0 units - MIR 804 Qualitative Skills
- 1.0 units - MIR 805 Labour Relations Skills
- 1.0 units - MIR 806 Human Resource Management Skills
- 1.0 units - MIR 807 Strategic Bargaining Components
- 1.0 units - MIR 808 Team Skills
- 1.0 units - MIR 809 Mediation Skills
- 1.0 units - MIR 811 Occupational Health and Safety

Winter Term (January – April)

Core 6 Units:

- 6.0 units - ARTL-810 Arts Leadership Capstone Project

Skills seminars (non-credit) with industry leaders will be held throughout the program.

ASTRONOMY AND ASTROPHYSICS

Head
Hanes, D.A.

Professors
Duncan, M.J., Hanes, D.A., Henriksen, R.N., Irwin, J.A., Lake, K.W., Widrow, L.M.

Associate Professor
Courteau, S.

Adjunct Associate Professor
Wade, G.A.

Adjunct Assistant Professor
Spekkens, K.

Facilities

Astronomy is conducted as a research program in the Department of Physics, Engineering Physics and Astronomy. Staff and student offices together with laboratory space are located on the third floor of Stirling Hall. Most of the radio observational data continues to be obtained with the Very Large Array (VLA) operated by the National Radio Astronomy Observatory near to Socorro, New Mexico, the James Clerk Maxwell Telescope in Hawaii, the Five Colleges Radio Astronomy Observatory at Amherst Massachusetts, the MERLIN array at Jodrell Bank, University of Manchester UK, and the Parkes Radio Facility in Australia. The Nobeyama facilities in Japan have also been used. Optical observations are carried out at the Canada-France-Hawaii Telescope (CFHT) in Hawaii, at the Cerro Tololo Interamerican Observatory (Chile), and at various other multi-national facilities including the Hubble Space Telescope. Infra-Red observations to date have been carried out at the CFHT. Numerous programs for reducing data are available, including the Astronomical Image Processing System (AIPS), and the Image Reduction Astronomical Facility (IRAF). Members of the Group can readily access data from the Canadian Astronomical Data Centre (CADC), the NASA National Space Science Data Center, and from other world-wide data centres, using INTERNET.

A large fraction of the activity of the Group lies in the domain of Theoretical Astrophysics, Physical Cosmology, and General Relativity. Theoretical simulations and analysis are well supported by a locally and internationally networked system of Sun, HP, Silicon Graphics, MIPS, and DEC workstations, together with the necessary peripheral equipment. There is also an extensive algebraic computation facility.

The headquarters of the Sudbury Neutrino Observatory (SNO) is located in the Queen's Physics Department, which encourages collaborative theoretical and observational work with this new world-class facility. The Group also has substantial links with the Canadian Institute of Theoretical Astrophysics (CITA) in Toronto. In addition, various arrangements allow access to both Canadian and American super-computing facilities.

Fields of Research

a. Formation and dynamical evolution of the Solar System.
b. Non-linear dynamical systems, chaos and astrophysics, self-similarity and hierarchical structures.
c. The interstellar medium and star formation.
d. Observation studies and dynamical simulations of star clusters; star clusters in external galaxies separate class.
e. High energy astrophysics, stellar structure and evolution.
f. Theoretical and observational studies of pulsars, galactic x-ray sources, neutron stars and black-holes.
g. The interstellar medium in external galaxies, and active galactic nuclei.
h. Radio Astronomy: theoretical and observational studies of radio galaxies and extragalactic x-ray sources.
i. Galaxy formation, structure, and evolution; galaxy mergers.
j. Physical Cosmology: theoretical simulations and observations of large scale structures in the Universe; Extragalactic distance scale.
k. The early Universe: formation of large structure, dark matter.
l. Mathematical General Relativity: gravitational collapse, singularity structure, cosmic censorship, exact solutions, quantum theory on curved spacetime.

Courses and Programs of Study

Details of course offerings are given under the Department of Physics, Engineering Physics and Astronomy. In particular the following course offerings should be noted: PHYS-811*, PHYS-813*, PHYS-814*, PHYS-815*, PHYS-816*, PHYS-823*, PHYS-832*, PHYS-840** to PHYS-848**, PHYS-861**, PHYS-913*, PHYS-914*, and PHYS-926*.

BIOCHEMISTRY

CHANGES TO THIS PROGRAM, AS OF SEPTEMBER 2014:

Effective September 2014, the graduate programs in Biochemistry become part of the Department of Biomedical and Molecular Sciences. There is no new admission to Biochemistry effective September 2014.

Graduate students registered in Biochemistry prior to September 2014 would normally be expected to follow the programs of study and degree requirements listed below.

For more information, go to: Department of Biomedical and Molecular Sciences section of this calendar.

Programs of Study

Master of Science and Doctor of Philosophy

Applicants are accepted under the general regulations of the School of Graduate Studies. Acceptance requirements are: minimum upper second class honours degree or equivalent for entry into the M.Sc. program; and first class honours degree or M.Sc. degree in biochemistry for entry into the Ph.D. program.

The degree programs consist of course work, seminars, research, and the completion and defense of a thesis document. The scope and extent of the course work may vary with the previous experience of each applicant.

BIOLOGY

Head
Cumming, B.F.

Associate Head
Young, P.G.

Coordinator of Graduate Studies
Lefebvre, D.D.

Professor
Aarssen, L.W., Arnott, S.E.Bendena, W., Chin-Sang, I.D., Chippindale, A.K., Cumming, B.F., Eckert, C.G., Friesen, V.L., Grogan, P., Hawryshyn, C.W., Ko, K., Lefebvre, D.D., Lougheed, S., Montgomerie, R.D., Moyes, C.D., Plaxton, W.C., Regan, S.M.[1], Robertson, R.M., Smol, J.P., Snedden,W.A., Tufts, B.L., Walker, V.K., Young, P.G.

Associate Professor
Martin, P.R., Nelson, W.A., Seroude, L., Wang, Y.

Assistant Professor
Bonier, F., Colautti, R., Friedman, J., Monaghan, J., Orihel, D.

Professor Emeritus
Bidwell, R.G.S., Boag, P.T., Crowder, A.A., Dennis, D.T., Harmsen, R., Hodson, P.V., Leggett, W.C., Morris, G.P., Ratcliffe, L.M., Robertson, R.J., Wyatt, G.R.

Cross-Appointed
Blennerhassett, M., Daugulis, A.J., Davies, P.L., Day, T., Dumont, E., Paterson, W.G., Quinsey, V.L., Taylor, P.D., Troje, N., Vanner, S.J.

Adjunct Faculty
Babak, T., Birt, T.P., Blanchford, P., Boag, P.T., Casselman, J.M., Chabot, A., Charmantier, A., Douglas, M.S.V., Greenwood, M., Fortin, M.-J., Frank, K., Hill, C.E., Hunt, S., Johnson,T.B., Kukal, O., Kurek, J., Langlois, V., Litzgus, J., McGinn, P.,Molina, I., Nocera, J.J., Paterson, A., Ratcliffe, L.M., Ridgway, M., Robertson, G., Rooney, R., Rusak, J.A., Schamp, B., Selbie, D., Tai, H., Vancoeverdendegroot, P., Yakimowski, S., Young, J., Zeeb, B.A.

1 - On Sabbatical July 2018-April 2019

Departmental Facilities

The Biology Department is located in the BioSciences Complex, a large building with offices, teaching laboratories, lecture rooms and extensive research facilities. The Department also maintains the Queen's University Biological Station: more than 3000 ha of woodland, fields and shoreline on both Lake Opinicon and Elbow Lake, 50 km north of Kingston. This station has extensive laboratory and teaching facilities and can provide accommodation for 75 or more researchers and students interested in population and community ecology, limnology, behavioural ecology, and conservation biology.

Our research is focused mainly on two currently vibrant areas of biology: (1) molecular, cell, and integrative biology, and (2) ecology, evolution and behaviour. In support of this research, we have both aquatic and animal care facilities in the BioSciences Complex, an excellent herbarium for local and arctic flora, a gentotyping facility, and a large, well-equipped Phytotron (greenhouse) for plant growth and tissue culture. Our research laboratories are also well equipped for studies in a wide variety of disciplines including physiology and biochemistry, genetics, genomics and proteomics, paleolimnology, and cell biology (including microscopy and imaging).

Throughout our graduate program we emphasize both communication and quantitative skills to prepare our graduates for a wide range of employment opportunities in academia, government, and the private sector. We achieve this through hands-on research, seminars and journal clubs, lab meetings, and a suite of graduate courses and workshops.

Graduate students are guaranteed a minimum annual income for the first two years of the MSc degree and the first four years of the PhD, in the form of scholarships, teaching assistantships, and stipends from supervisors' research grants. This guaranteed income is sufficient to cover the costs of tuition, food and lodging. Detailed information on faculty and graduate student research, and the current minimum guaranteed income for graduate students is available on the Department’s website.

Degree Programs

Master of Science and Doctor of Philosophy

Applicants for the degrees of Master of Science and Doctor of Philosophy are accepted under the general regulations of the School of Graduate Studies.

BIOMEDICAL AND MOLECULAR SCIENCES

Associate Head, Postgraduate Education
Banfield, B.

Graduate Coordinator
Banfield, B.

Field Coordinators of Graduate Studies

M.Sc. (Anatomical Sciences)
MacKenzie, L.W.

Biochemistry and Cell Biology
Craig, A.W.

Experimental Medicine
Magoski, N.

Microbes, Immunity and Inflammation
Martin, N.L.

Reproduction and Developmental Sciences
Graham, C.H.

Therapeutics, Drug Development, and Human Toxicology
Massey, T.E.

Professor
Adams, M.A., Andrew, R.D., Banfield, B., Bennett, B.M., Carstens, E.B., Côté, G.P., Davies, P.L., Ferguson, A.V., Fisher, J.T., Funk, C.D., Graham, C.H., Jarrell, K.F., Jia, Z., Jones, G., Kan, F.W.K., Kawaja, M.D., Magoski, N.S., Massey, T.E., Maurice, D.H., Mueller, C.R., Munoz, D.P., Nakatsu, K., Oko, R.J., Pang, S., Paré, M., Petkovich, P.M., Poole, R.K., Raptis, L.H., Reynolds, J.N., Rose, P.K., Scott, S.H., Smith, S.P., Szewczuk, M.R., Tayade, C., Winn, L.M., Zhang, S.

Associate Professor
Allingham, J., Basta, S., Blohm, G., Craig, A.W.B., Dumont, E.C., Easteal, R.A., Gee, K., Hill, B.C., Lomax, A.E.G., MacKenzie, L.W., MacLeod, R.J., Martin, N., Ozolins, T.R.S., Ward, C.A.

Assistant Professor
Duan, Q., Gallivan, J., Ghasemlou, N., Koti, M., Ormiston, M.

Professor Emeritus
Abrahams, V.C., Aston, W.P., Boegman, R.J., Brien, J.F., Chapler, C.K., Clark, A., Croy, B.A., Flynn, T.G., Forkert,, P.G., Forsdyke, D.R., Jellinck, P.H., Jennings, D.B., Jhamandas, K.H., Joneja, M.G., Mak, A.S., Ossenburg, N., Racz, W.J., Reifel, C.W., Shin, S.H., Sinclair, D.G., Zarzecki, P.

Cross-Appointed
Archer, S.A., Baranchuk, A.M., Beyak, M.K., Blennerhassett, M., Cole, S.P.C., Davey, S., Deeley, R.G., Duggan, S., Ellis, A., Ellis, R., Evans, G.A., Fitzpatrick, M.R., Flanagan, J.R., Flavin, M.P., Flynn, L., Gilron, I., Greer, P.A., Holden, R., Jin, A., Johri, A., Leger, A., Lougheed, M.D., Martinez-Cajas, J., Mulligan, L., Neder, J.A., Nicol, C.J., O'Donnell, D.E., Olmstead, E.C., Parker, C.M., Parlow, J., Paterson, W.G., Petrof, E., Plaxton, W.C., Pukall, C., Redfearn, D.P., Rivest, F., Robertson, R.M., Ropeleski, M.J., Siemens, D.R., Sivilotti, M.L.A., Smith, G.N., Tschakovsky, M.E., Van Vugt, D.A., Vanner, S.J., Walia, J., Walker, V.

Adjunct Professor

Adjunct Associate Professor
Baer, A.R., Brockhausen, I., Cahill, C.M., Elbatarny, H.S., Othman, M.

Adjunct Assistant Professor
Bedard, L.L., Campbell, R., Chitayat, S., Finnen, R.L., Graham, L.A., Kim, P.M., Majury, A.L.S., McNamee, J.P, Philbrook, N., Ratz, J., Reed, D., Selbie, W.S.,Tse, M.Y., Walker, R.M.

Facilities

The Department of Biomedical and Molecular Sciences (DBMS) is located in Botterell Hall, which also houses the Bracken Health Sciences library and excellent animal care facilities. Students in the DBMS graduate program will have access to infrastructure and expertise from 58 primary DBMS faculty members, which includes 4 Tier I and 3 Tier II Canada Research Council Chairs, in the Centre for Cardiac, Circulation, and

Respiratory Science, the Gastrointestinal Disease Research Unit, the Centre for Neuroscience Studies, the Research Group in Reproduction, Development, and Sexual Function, the Protein Function and Discovery Facility and the Divisions of Cardiology, Gastroenterology, Emergency Medicine, Neurology and Respirology in the Faculty of Health Sciences. In addition to the unique equipment found in the laboratories of participating faculty, additional resources available to students include a common animal care facility, common autoclaves, common and individual bacterial incubators, common and individual centrifuges, common cold rooms, common confocal microscopes, common and individual fluorescent microscopes, common dark rooms, common and individual gel documentation systems, a common electron microscopy suite, and a common stores.

Financial Assistance

Graduate students are encouraged to apply to external granting agencies for fellowships and studentships. Research assistantships from grants held by members of faculty, and teaching assistantships, are available. Thesis based graduate students enrolled in the DBMS graduate program will receive funding packages to assist with living expenses and coverage of tuition: MSc - $19,000 minimum stipend; PhD - $21,000 minimum stipend.

Fields of Research

Both master's and doctoral students may choose to concentrate on one of the following fields of study:

- BIOCHEMISTRY and CELL BIOLOGY
- EXPERIMENTAL MEDICINE
- MICROBES, IMMUNITY and INFLAMMATION
- REPRODUCTION and DEVELOPMENTAL SCIENCES
- THERAPEUTICS, DRUG DEVELOPMENT, and HUMAN TOXICOLOGY

Programs of Study

Applicants are accepted under the general regulations of the School of Graduate Studies.

Master's Program

PATTERN I: Master of Science (M.Sc.) in Biomedical and Molecular Sciences

The Master of Science (M.Sc.) in Biomedical and Molecular Sciences consists of course work, seminars, research project and thesis (with oral defense).

Applicants are accepted under the general regulations of the School of Graduate Studies.

Admission requirement: minimum second class standing in an honours bachelor's degree.

The M.Sc. in Biomedical and Molecular Sciences, requires, at minimum, the completion of 12 credit units at the graduate level. BMED- 860* Fundamentals of Research (3 credit units) and BMED- 897*Research Seminars (3 credit units) are mandatory courses. Additional required credit units are specified by some of the Field Specialization (see below). Students may take no more than one 3 credit unit dual-numbered undergraduate course towards their total additional required credits.

Specific Field Course Requirements in addition to the 6 mandatory credit units described above:

Biochemistry and Cell Biology: M.Sc. students in this field can choose from any BMED graduate courses to complete the remaining 6 credit units of coursework in consultation with the supervisor. It is highly recommended that students take at least one graduate course offered by the Biochemistry and Cell biology field: BMED-820*, BMED-821*, BMED-823* or BMED-842*. Graduate courses offered through other departments may also be taken if approved by the Graduate Coordinator in consultation with the supervisor.

Experimental Medicine: M.Sc. students in this field can choose from any BMED graduate courses to complete the remaining required 6 credit units of coursework in consultation with the supervisor. Graduate courses offered through other departments may also be taken if approved by the Graduate Coordinator in consultation with the supervisor.

Microbes, Immunity, and Inflammation: M.Sc. students in this field can choose from any BMED graduate courses to complete the remaining required 6 credit units of coursework in consultation with the supervisor. Graduate courses offered through other departments may also be taken if approved by the Graduate Coordinator in consultation with the supervisor.

Reproduction and Developmental Sciences: M.Sc. students in this field can choose from any BMED graduate courses covering reproduction and development, or if appropriate other BMED graduate courses to complete the remaining required 6 credit units of coursework. Graduate courses offered through other departments may also be taken if approved by the Graduate Coordinator in consultation with the supervisor.

Therapeutics, Drug Development, and Human Toxicology: M.Sc. Students in this field must complete an additional 3 credit units from the Methods Modules. In addition, students must complete 3 credit units from one of BMED-813*, BMED-809*, BMED-815*, BMED-853*, or BMED-854*; the specific course will be determined in consultation with the supervisor. In cases where students do not have the necessary background in core pharmacology, BMED-840* and BMED-849* may also be required.

PATTERN II: Master of Science (Anatomical Sciences)(M.Sc.[A.S.])

The Master of Science (Anatomical Sciences) is a 16-month intensive program of courses and practicum focused on educating and training students to teach and design anatomical curriculum in health sciences.This program is structured around three basic pillars of post-secondary education: Content, Pedagogical and Inquiry Competence. Students are provided with in-depth courses in the four anatomical disciplines, together with courses on teaching and learning in higher education (one full and seven half advanced courses). The practicum provides the students with hands-on experience in human gross anatomy dissection, techniques in specimen preparation, histology techniques, electronic media, digital imaging technology for anatomical sciences, and classroom (both large and small) and laboratory teaching in undergraduate and graduate courses. Students also complete an independent research study with project topics selected from areas in Anatomy and Cell Biology, Pedagogy in Anatomical Sciences or Instructional Technology.

Students are admitted annually on September 1.

Admission requirement: A recognized honours degree with a background in Biology or Health Sciences or equivalent professional degrees (BN.Sc., B.Sc. PT).

Doctor of Philosophy

Doctor of Philosophy (Ph.D.) in Biomedical and Molecular Sciences

This a research degree requiring approximately four years of study. The number of courses prescribed depends on the student's background in relation to the chosen field of study. The research and thesis will normally take up at least two thirds of the student's full-time study requirements. All doctoral students are required to take a two-part comprehensive examination within the first eighteen months of the program.

Admission requirement: A Master’s degree is normally required for admission to the Ph.D. program although in certain circumstances direct admission to the Ph.D. program is possible.

Mini-Master's examination: A student registered in the M.Sc. program in DBMS with an excellent academic record and exceptional ability to perform research, may be accelerated into a Ph.D. program upon recommendation of the Biomedical and Molecular Sciences program and following submission and defense of a 'mini-master's' thesis. This is an abbreviated write-up of the candidate's research carried out to date as well as a general plan to complete the Ph.D. research. It is recommended that a 'mini-master's' should be considered in the first 1.5 years of the program for students performing at excellent levels.

BIOMEDICAL ENGINEERING

Biomedical Engineering encompasses a range of topics involving the application of engineering principles to both medicine and the life sciences. Biomedical Engineers are involved with the design and development of medical implants and assistive devices, new tools and therapeutic approaches to advance healthcare, improved diagnostic imaging and biosignal processing as well as basic research in the life sciences to improve our understanding of biophysical phenomena and physiological processes.

Interdisciplinary research in biomedical engineering has been undertaken for over 25 years at Queen's University, but in separate engineering departments. The Departments of Chemical, Electrical and Mechanical Engineering are now formally collaborating to provide a biomedical engineering collaborative specialization that allows graduate students to access courses and co-supervisors in each of these department, as well as courses in Anatomy, Cell Biology and Biochemistry.

The collaborative specialization is available to doctoral students and research masters students associated with the three member graduate departments at Queen's University.

Application Procedure

Applicants are accepted under the general regulations of the School of Graduate Studies and of the member graduate departments.

The collaborative specialization is offered at both the Masters and Doctoral levels. Applications are reviewed by a committee composed of representatives from each of the three participating departments. For further details, interested students are encouraged to contact the representative from the department that is best aligned with their current research interest:

Chemical Engineering: Prof. Brian Amsden

Electrical and Computer Engineering: Prof. Evelyn Morin

Mechanical and Materials Engineering: Prof. Qingguo Li

Program of Study

The collaborative specialization is available to eligible, approved doctoral students and research masters students associated with the three member graduate departments at Queen's University.

Students will enroll in their respective home departments and must meet the degree program requirements of their home departments.

There will be two mandatory core courses students in the program must take: CBME-801* Topics in Biomedical Engineering and CBME-802* Biomedical Engineering Seminar.

Students must enroll in at least one course outside of their home department, from a list of Biomedical Engineering graduate courses.

Upon graduation, students will have "with specialization in Biomedical Engineering" added to their official transcripts.

Financial Support

Full-time students are encouraged to seek external financial support and are encouraged to apply for NSERC and OGS graduate scholarships. Fellowships and teaching assistantships are available through the University and students are automatically considered for these, on a competitive basis, upon admission to one of the member programs.

GRADUATE DIPLOMA IN BIOMEDICAL INFORMATICS AND PROFESSIONAL MASTER'S IN BIOMEDICAL INFORMATICS

Program Overview

Queen's School of Computing (QSC) and the Department of Biomedical and Molecular Sciences (DBMS), Queen's University, have developed the Graduate Diploma and professional Master's programs in Biomedical Informatics. The programs train future data scientists who can translate data into knowledge that may transform how health care is approached and delivered. The programs are aimed at students with training in biology, life sciences, biochemistry, medical sciences, computer science, biostatistics, engineering, and related disciplines, who are interested in designing and implementing quantitative and computational methods that solve challenging problems across the entire spectrum of biology and medicine, and who wish to develop the skills required for a range of exciting careers in medicine, research and development, or industry.

The focus of these programs is on the application of existing tools and techniques for managing and analysing biomedical data.

Admission Requirements

To be considered for admission to the Graduate Diploma in Biomedical Informatics and Professional Master's in Biomedical Informatics, an applicant must hold a minimum of a BSc (Honours) degree in biology, life sciences, biochemistry, medical sciences, computer science, biostatistics, engineering, and related disciplines from a recognized university or equivalent. The minimum acceptable average for admissions to these programs is B+ in the third and fourth years of the student's undergraduate program (all courses considered). Students applying from outside of North America whose native language is not English are required to submit TOEFL (or equivalent) scores. It is recommended that applicants have undergraduate training in biostatistics and experience in scientific computation. An assessment of these skills will be done immediately upon entry into the program enabling the identification of knowledge gaps and the subsequent development of a specific plan of study for each student when necessary. Although the program is aimed at recent graduates from undergraduate programs, applicants from professional programs such as medicine and nursing are also welcome.

Applications will be welcome from qualified under-represented groups.

Programs Structures and Requirements

Graduate Diploma in Biomedical Informatics (GDip[BI])

This is a full time program which will span 4 months total. The graduate diploma program will consist of the following four courses each worth 3.0 credit units (3CU) and which includes a final biomedical informatics paper which is part of CISC-897*.

- CISC-897* Research Methods in Computer Science
- BMIF-801* Programming Skills and Tools for Processing of Biomedical Data
- BMIF-802* Biomedical Data Analysis
- BMIF-803* Data Mining and Applications

Students in the Graduate Diploma program will be permitted to ladder coursework successfully completed within the Diploma program into the Master's program (i.e. obtain advanced standing in the Master's program).

Professional Master's in Biomedical Informatics (MBI)

This is a full time program which will span 12 months total. The program will consist of courses equivalent to 24 credit units (CU) as follows:

- The four 3-credit unit (3CU) courses from the Graduate Diploma Program (12 CU).
- BMIF- 898 Master's Project (6CU). A biomedical informatics project is undertaken under the co-supervision of a QSC faculty and a DBMS faculty member. The presentation of a seminar to describe the project is required.
- Two additional 3 credit unit (3CU) courses from a list of elective courses presented below (6CU). Students with a predominantly computing background may take at most one CISC-based elective. Students with a predominantly biomedical background may take at most one BMED-based elective.

Elective courses for the Professional Master's of Biomedical Informatics (all courses are 3CU):

- CISC-832* Data Base Management Systems
- CISC-859* Pattern Recognition
- CISC-873* Data Mining
- CISC-881* Bioinformatics
- CISC-886* Cloud Computing

- BMED-809* Principle of Drug Discovery and Development
- BMED-810* Protein Structure and Function
- BMED-811* Advanced Molecular Biology
- BMED-813* Advances in Neuropharmacology
- BMED-815* Mechanistic Toxicology
- BMED-854* Cardiovascular Sciences

Note: With the approval of the Director (who will consult with both departments), MBI students may be able to choose from a number of additional graduate offerings from DBMS and QSC, subject to the maximums specified.

BIOSTATISTICS

Director
Peng, P., Public Health Sciences, and Mathematics and Statistics

Associated Departments and Faculty Members
Public Health Sciences: Chen, B., Ding, K., McIssac, M., Peng, P., Tu, D.
Mathematics and Statistics: Jiang, W. Lin, D., McIssac, M., Peng, P.,Takahara, G., Thomson, D., Tu, D.

Overview

The collaborative specialization in Biostatistics was created in response to the growing demand in Canada and the United States for qualified Master's level biostatisticians in academic and industry sponsored epidemiologic and health services research.

Graduates will be capable of working as biostatistical consultants within multi-disciplinary health research teams. This objective will be achieved through coursework that will equip students with a sound knowledge in observational and experimental epidemiologic designs, statistical theory, statistical models for health data analysis, and statistical computing. A four month practicum will allow students to apply basic knowledge and develop consulting expertise within a health research group in a university or industry setting.

Admission

Students must first gain admission to the pattern II M.Sc. program offered by one of the associated departments (Public Health Sciences or Mathematics and Statistics) if they wish to complete their degree with a specialization in biostatistics. Students are strongly advised to indicate their desire to complete their degree with a specialization in biostatistics prior to submitting their initial application.

Students admitted to the biostatistics specialization will normally have an honours B.Sc. degree with high standing (75% or above) in statistics, mathematics, computer science, biology, life sciences, or health sciences; and strong analytical skills.

Registration and Specialization Requirements

To register in the specialization students must complete the enrolment form available from their home department. Students registered in the specialization will be required to complete 8 term courses (six mandatory courses and two electives) and a practicum. The six required courses will include EPID-801*, EPID-804*, EPID-823*, STAT-862*, STAT-886*and MATH-896* (for students registered in Mathematics and Statistics) OR STAT-853* (for students registered in Public Health Sciences). The remaining two electives are subject to departmental approval.

The practicum will involve a four month placement working on a project pertaining to some aspect of biostatistics applications or a methodological research affiliated with the work of the supervisor. Students must write a report on their practicum and make a presentation to an examining committee.

Students who complete this specialization will have their transcript amended to read that their Master's degree was earned “with a specialization in biostatistics".

CHEMICAL ENGINEERING

Head
Amsden, B.G.

Associate Head
Kontopoulou, M.

Coordinator of Graduate Studies
Docoslis, A.

Professor
Amsden, B.G., Cunningham, M.F.[1], Giacomin, A.J.[2], Guay, M., Harris, T.J., Hutchinson, R.A., Kontopoulou, M., McAuley, K.B., McLellan, P.J., Parent, J.S., Peppley, B.A., Ramsay, J.A., Woodhouse, K.A.

Associate Professor
Barz, D., Docoslis, A.

Assistant Professor
Escobedo, C., Fitzpatrick, L., Hudon, N., Li, X., Wells, L.

Professor Emeritus
Baker, W.E., Becker, H.A., Daugulis, A.J., Hsu, C.C., Hunter, B.K., McCowan, J.D., Neufeld, R.J.

Adjunct Professor
McKenna, T.F.L.

Adjunct Associate Professor
Karan, K., Ramsay, B.A.

Adjunct Assistant Professor
Flynn, L.

Adjunct Lecturer
Poirier, D.

Lecturer
Mody, D.

Cross-Appointed from other Departments
Champagne, P., Zeman, F.

1 - Ontario Research Chair in Green Chemistry and Engineering
2 - Canada Research Chair (Tier I) Rheology

Departmental Facilities

The Chemical Engineering department is based in Dupuis Hall, which is a multi-purpose facility with extensive research laboratories, and large-and small-group teaching classrooms. Department researchers in the biochemical, biomedical and environmental engineering fields also have laboratory facilities in the multi-disciplinary Biosciences complex, and in the Human Mobility Research Centre (HMRC) at Kingston General Hospital. We are a medium-sized department, with sufficient size to ensure a breadth of research activities, yet small enough to foster a cohesive learning environment. Research serials and books are housed in the recently renovated Engineering, Mathematics, and Science library, and a variety of search and document delivery facilities are available on-line. Research is being conducted in the fields of polymer and reaction engineering, (including fuel cells), biochemical (including biomedical and environmental), and process systems engineering. Facilities within the polymer and reaction engineering field include a variety of bench and pilot scale polymerization reactors (gas-phase polyolefin, solution and emulsion free-radical, living-radical and condensation polymer systems), polymer processing equipment (twin-screw extruder, Haake internal mixer), rotational and capillary rheometers, fuel cell equipment, plus two wind tunnels and a gas fired research furnace. The biochemical research facilities include numerous fermentors, and biomedical research facilities include cell and tissue culture labs. The Chemical Engineering Analytical Facility (ChEAF) was established for the measurement of polymeric physical, thermal and structural properties, and is supported by the Senior Research Engineer. Physical measurements and chemical analyses are carried out using a variety of instruments such as gas chromatographs, elemental analyzer, HPLCs, gel permeation chromatographs, BET surface area analyzer, capillary hydro-dynamic fractionation submicron particle size analyzer, spectrophotometers, IR, FTIR, GC mass spectroscopy, and also by means of novel probes based in light scattering, absorption and fluorescence. Research computations are conducted on a variety of PC and Unix-based computer platforms, using a wide range of symbolic computation, numerical analysis, statistical analysis and process simulation software. The research laboratories are supported by the departmental laboratory technologists while the computing

facilities are supported by the Engineering and Applied Science Computing Services Group.

Researchers in the department are affiliated with the Human Mobility Research Centre (HMRC)(http://hmrc.engineering.queensu.ca/).

Financial Support

The Department of Chemical Engineering endeavours as much as possible to ensure that every full-time graduate student engaged in research has adequate financial support during his or her graduate program. This support may come from several sources, either individually or in combination with National or Provincial scholarships, Queen's University scholarships and awards, research assistantships provided by faculty researchers, and Departmental teaching assistantships. The minimum level of financial support is presently $25,000 per year for both Master's and Doctoral students. Students who are National Scholarship winners can expect overall financial support that is competitive with that provided by any Chemical Engineering department in Canada.

Fields of Research

The fields of research in the department are Biochemical Engineering, Polymers and Reaction Engineering, and Process Systems Engineering. Within these broad areas, the department has significant research activity in the following areas:

- **Biochemical Engineering:** Biological conversion of biological feedstocks to energy, materials and useful ends (e.g., degradation of pollutants). Feedstocks may be virgin sourced or may be waste material such as agricultural waste. Separation of products is also studied including the use of phase partitioning bioreactors to combine bioreaction and separation. Researchers: Andrew Daugulis, Juliana Ramsay, Bruce Ramsay and Pascale Champagne.
- **Environmental Engineering:** Biological conversion of pollutants to benign products using fermenters or in situ processing of contaminated soils. Work is also underway examining turbulent dispersion in the environment, primarily for air quality. Researchers: Juliana Ramsay, Bruce Ramsay and Andrew Daugulis.
- **Macro-molecular Processes and Products:** Polymer & reaction engineering with a broader title to include biological macro-molecules as well. The department has a particularly strong research concentration in this area, with one of the largest polymer engineering groups in North America and elsewhere internationally.

The research expertise spans the entire range of polymer engineering, from polymer reaction chemistry, to polymer reaction engineering, to processing and compounding. Expertise in biopolymers and biomaterials includes hydrogels, scaffold material for tissue regeneration, encapsulation of bioactive materials, polyurethanes for biomedical application and polymer gel dosimetry. Researchers: Brian Amsden, Michael Cunningham, A. Jeffrey Giacomin, Robin Hutchinson, Marianna Kontopoulou, Kim McAuley, Scott Parent, and Kim Woodhouse.

- **Biomedical Engineering:** Tissue engineering including scaffolds for adipose and muscle tissue regeneration, mechanical stimulation to promote regeneration, interaction between surfaces and cells in regeneration, oral delivery of insulin and polymer gel dosimeters. Researchers: Brian Amsden, Lindsay Fitzpatrick, Lauren Flynn, Laura Wells, and Kim Woodhouse. More information about the program can be found at: http://engineering.queensu.ca/programs/bme/
- **Process Systems Engineering:** Process control, optimization and applied statistics, including extremum-seeking control, parameter estimation in nonlinear dynamic models, diagnostics for statistical model building and parameter estimation, and systems biology. Researchers: Martin Guay, Tom Harris, Xiang Li, Kim McAuley, Jim McLellan and Nicolas Hudon.
- **Fuel Cells:** PEM and solid oxide fuel cells, alternative feeds to fuel cells including conversion of agricultural or municipal waste, low platinum electrodes, electrokinetics, control of fuel cell systems and parameter estimation for fuel cell models. Researchers: Dominik Barz, Kunal Karan and Brant Peppley.
- **Microfluidics and Biosensors:** Microfluidics and Biosensors, electrokinetics, pathogen and biomarker detection methods,Raman spectroscopy, surface plasmon resonance, on-chip cell manipulation and analysis. Researchers: Dominik Barz, Aris Docoslis and Carlos Escobedo.

Collaborative Biomedical Engineering Program

This collaborative program links the graduate programs in Chemical, Electrical and Mechanical Engineering and provides shared learning experiences with interdisciplinary content, bringing students from a variety of backgrounds together to learn about research methodology and professional practice in the field of Biomedical Engineering. Students are registered in one of the three home departments in a Master's or Doctoral program and will receive the designation of "specialization in Biomedical Engineering" upon graduation. More information about the program can be found at http://www.queensu.ca/sgs/biomedical-engineering and in this calendar at Biomedical Engineering.

Collaborative Graduate Specialization in Computational Science and Engineering

A three-course specialization that teaches you the latest methods for applying the power of high-performance computing to scientific problems in your area of study. From advanced numerical analysis, mathematical modelling and simulation, and parallel programming, these methods support and enhance more traditional approaches based on theory and experimentation. Completion of requirements entitles you to a special degree notation on your transcripts.

Degree Programs

Applicants for the following programs are accepted under the general regulations of the School of Graduate Studies.

Note that courses of instruction are provided in term length (3.0 credit units) weight) or modular six-week (1.5 credit units) types. Click on Chemical Engineering's Courses of Instruction for details.

Master's Degrees

Master of Applied Science (M.A.Sc.)

The minimum requirements to be fulfilled are 4 term courses, a department seminar and a thesis. Two graduate courses must be from within the Department of Chemical Engineering, unless otherwise approved by the research supervisor and departmental graduate coordinator. One course may be selected from 400-series courses in other departments. All students must take CHEM-801*, a non-credit course in laboratory safety, at the first opportunity after their initial registration, and also participate in CHEE-897, the departmental seminar series. All programs of study must be approved by the department.

Master of Engineering (M.Eng.)

The requirements for this program are 8 term length courses or a combination of term length and modular courses to equal 8 term length courses. At least 4 term length courses must be taken from the department. A maximum of 2 term length 400 series courses may be taken. All programs of study must be approved by the department. All students must take CHEM-801*, a non-credit course in laboratory safety, at the first

opportunity after their initial registration. With a graduate program focused on research, the current Departmental policy is to admit qualified applicants to the M.Eng. program with no financial support being offered by the University or the Department.

Doctor of Philosophy (Ph.D.)

Requirements additional to those in the general regulations are as follows. The minimum course requirement for the Ph.D. beyond the B.Sc. is 7 term length courses. Six must be graduate courses. The list of graduate courses taken will be evaluated by the supervisory committee on an ongoing basis and will be reviewed at the time of the oral comprehensive examination. All students must take CHEM-801*, a non-credit course in laboratory safety, at the first opportunity after their initial registration, and also participate in CHEE-897, the departmental seminar series.

Ph.D. candidates accepted with a Master's degree must take at least 4 term length courses. The list of graduate courses taken will be evaluated by the supervisory committee on an ongoing basis and will be reviewed at the time of the oral comprehensive examination. All programs of study must be approved by the department.

CHEMISTRY

Head
Loock, H.-P.

Coordinator of Graduate Studies
Oleschuk, R.D.

Professor
Beauchemin, D., Cann, N.M, Carrington, T.[1,3], Crudden, C.[3], Evans, P.A.[3,10], Hesp, S.A.M., Horton, J.H., Jerkiewicz, G., Jessop, P.G.[3], Liu, G.[3], Loock, H.P., Macartney, D.H., Nunzi, J.M.[3], Oleschuk, R.D., Wang, S., Wu, G.

Associate Professor
Brown, R. Stephen, Mosey, N.J., Petitjean, A.[1], Zechel, D.

Assistant Professor
Capicciotti, C., Ross, A., She, S.,Stamplecoskie, K.,Wang, P.

Professor Emeritus
Baird, M.C., Baker, W.E., Brown, R.J.C., Brown, R.Stanley, Buncel, E., Hunter, B.K., McCowan, J.D., Norris, A.R., Page, J.A., Shurvell, H.F., Snieckus, V.[4], Stone, J.A., Szarek, W.A., vanLoon, G.W.

Adjunct Professor
Lemieux, R.P.[8], Parnis, M.[11], Rafferty, S.[11]

Adjunct Associate Professor
Baranton, S.[9], Gueguen, C.[11], Kozin, I., Mombourquette, M., Whitney, R.A.

Adjunct Assistant Professor
Carran, J., Helferty, H., Lebel, O.[7], Mester, Z.[5], Sauriol, F., Wang, J.

Cross-Appointed
Cunningham, M.F., Parent, J.S., Smith, S.

1 - On Leave July 2018- December 2018
2 - On Leave July 2018-June 2019
3 - Canada Research Chair, Tier I
4 - Alfred Bader Chair Emeritus in Organic Chemistry

5 - NRC
6 - Environment Canada
7 - Royal Military College
8 - University of Waterloo
9 - University of Poitiers, France
10 - Bader Chair in Organic Chemistry
11- Trent University

Departmental Facilities

FT-NMR instrumentation includes multinuclear Bruker AVANCE 300, 400, fully automated 400, NEO-500,600 MHz and new NEO-700 MHz spectrometers. The 600 and 700 are equipped for solution and solid state studies.

The X-ray Crystallography Facility is equipped with a state-of-the-art Bruker AXS D8 Venture single crystal X-ray diffractometer. The diffractometer is equipped with four-axis Kappa goniometer, a Photon 100 detector for shutterless data collection and a dual micro-source configuration (Mo, Cu). The diffractometer is used for structure determination of single crystals and can also be used for powder diffraction.

The Surface Analysis facility is equipped with Kratos Nova Axis X-ray photoelectron spectrometer and a FEI Quant 250 Scanning Electron Microscope (SEM). X-ray photoelectron spectroscopy (XPS) is used to analyze the surface chemistry of a solid material. The material can be a powder (e.g. nanomaterials) or a film (organic polymers, inorganic compounds, paints, ink, etc.) deposit on substrates like gold, glass or on a Si wafer. Electron scanning microscopy is a technique used for characterization of micro and nanostructured materials with X-ray spectroscopic capabilities.

The Mass Spectrometry Facility offers mass spec analysis with a variety of instruments and ionisation techniques, including electron impact (EI), chemical ionisation (CI), fast atom bombardment (FAB), field desorption (FD), matrix-assisted laser desorption/ionisation (MALDI) and electrospray ionisation (ESI). For further details see our website. Also available is an Ultra Mass 700 inductively coupled plasma mass spectrometer.

Other spectroscopic equipment includes a Bruker RFS-100 FT-Raman spectrometer; Bruker IFS-25 and Bomem MB-120 FT-IR spectrometers; Beckman DU-64, Hewlett-

Packard HP8452A and Varian Cary 3 UV-visible spectrophotometers; several stopped-flow spectrophotometers; and a JASCO circular dichroism spectropolarimeter.

The Photonic and Electronic Materials Laboratory is equipped with a Perkin-Elmer DSC6 and DSC7 and Mettler TA-30 differential scanning calorimeters, three Nikon polarizing microscopes equipped with heating stages, testbeds for the characterization of liquid crystal electrooptical properties, a high-pressure Xe arc lamp source, a Molecular Imaging PicoSPM atomic force microscope equipped with a Hysitron nanoindentor for nanoscale force measurements, a vacuum chamber for chemical vapour deposition, a PTI fluorimeter, a Perkin-Elmer thermal gravimetric analyzer, a Nicolet IR Spectrometer with attenuated total reflective attachment, and several pulsed and continuous wave laser systems.

A laser photochemistry laboratory is equipped with Lambda Physik LPX 205i excimer and ScanMate 2E tunable dye lasers and a Continuum NdYAG laser and a time-of-flight mass spectrometer with high kinetic energy resolution.

A wide range of analytical equipment is available including electrothermal and flame atomic absorption instruments, gas chromatographs, a Waters Alliance gel permeation chromatography system, HPLC instruments, a scintillation counter, an X-ray fluorescence spectrometer, and instrumentation for research in electro-analytical chemistry, a microfluid research facility with a microfluid tool kit, micro-hot embosser, Nikon microscope with video capture and imaging equipment and access to microfabrication facilities.. A 2500 lbs. MTS tensile tester is used for the physical characterization of polymers. A SLOWPOKE-2 reactor, used for neutron activation analysis, is shared with the Royal Military College.

The Department is fully connected to the Internet and makes extensive use of local area networks. We are connected to the University via a fibre optic back bone, and from there to the world. The front end is a SunSparc Ultra which handles all e-mail and file serving for the Department. Another Sparc handles the World Wide Web pages for the Department. The Department employs a full time Network Administrator as well as Electronics personnel who handle connectivity and configuration issues for all users.

The Department has excellent technical support for research: Electronics and Computer service shop; network and software support in house; glassblowing services; as well as expert NMR, X-Ray, Mass-Spec and Surface Analysis Instruments user support on a full time basis.

Financial Assistance

The Department of Chemistry offers support for each full-time student during the first two years in a Masters program and the first four years in a Doctoral program. The current minimum is $23,000 for Canadian and international students per annum, derived from university scholarships and research and teaching assistantships. Students who are successful in competition for Natural Sciences and Engineering Research Council Scholarships or other major awards may augment these awards considerably by working as a teaching assistant in the Department.

Fields of Study

A summary of current research interests of each member of the Department of Chemistry is available on our website http://www.chem.queensu.ca
Materials Science and Technology: The Department cooperates with the Departments of Chemical Engineering, Electrical and Computer Engineering, Materials and Metallurgical Engineering, Mechanical Engineering and Physics in offering courses and research projects to students wishing to concentrate in materials science and technology. Students are registered for M.Sc. and Ph.D. degrees in one of the six departments and are encouraged to take relevant courses from the others.

Programs of Study

Master of Science (M.Sc.), Master of Applied Science (M.A.Sc.), and Doctor of Philosophy (Ph.D.) with thesis

The M.Sc. and M.A.Sc. programs include a thesis based on independent research and six module lecture courses (each equivalent to one-half of a term course) or the equivalent of three term lecture courses beyond the Bachelor's degree, plus CHEM-802* and CHEM-803*. Unless permission is obtained from the supervisor and coordinator of graduate studies at least four modules (excluding CHEM-803*) must be from among those offered by the Department of Chemistry.

The Ph.D. program usually requires at least six module lecture courses (each equivalent to one-half of a term course) or the equivalent of three term lecture courses beyond the Bachelor's degree plus CHEM-802*, CHEM-803*, a candidacy examination, a research seminar, and the completion of a thesis based on independent research. Unless permission is obtained from the supervisor and the coordinator of graduate studies at least two modules (excluding CHEM-802* and CHEM-803*) must be from among those offered by the Department of Chemistry.

Students registered in a Ph.D. program in Applied Sciences/Engineering are required to complete eight module lecture courses (or the equivalent of four term lecture courses) beyond the Master's requirements including CHEM-803*, unless already completed, a candidacy examination, a research seminar, and the completion of a thesis based on independent research. Unless permission is obtained from the supervisor and coordinator of graduate studies at least two modules (excluding CHEM-803*) must be from among those offered by the Department of Chemistry.

Students who intend to work in a chemical laboratory must pass departmental safety and Workplace Hazardous Materials Information System (WHMIS) training at the earliest possible opportunity.

CIVIL ENGINEERING

Head
Novakowski, K.S.

Coordinator of Graduate Studies
Boegman, L.

Professor
Anderson, B.C., Brachman, R.W.I., Champagne, P., da Silva, A.M.F., Fam, A.Z.[3], Green, M.F., Kueper, B.H., Moore, I.D.[2], Novakowski, K.S., Rowe, R.K.[1], Take, W.A.

Associate Professor
Boegman, L., MacDougall, C.,Filion, Y., Hoult, N., Mumford, K.

Assistant Professor
Abdelaal, F.B., Genikomsou, K., Mulligan, R.

Professor Emeritus
Campbell, T.I., Kamphuis, J.W., Mitchell, R.J., Raymond, G.P., Rose, K., Van Dalen, K., Watt, W.E.

Adjunct Professor
Erki, M.A.[4], Lamarche, P.[4], Loewen, M.

Adjunct Associate Professor
Wight, R.G.[4]

Adjunct Assistant Professor
Noel, M, Shore, J.[4] , Speight, V [5]

Cross Appointed
Bathurst, R.J.[4], Siemens, G.[4]

1 - Canada Research Chair in Geotechnical and Geoenvironmental Engineering
2 - Canada Research Chair in Infrastructure Engineering
3 - Associate Dean (Research & Graduate Studies), Donald & Sarah Munro Chair in Engineering and Applied Science
4 - RMC
5 - Latis Associates

Departmental Facilities

The laboratories at Ellis Hall and the West Campus are well equipped for research studies in structures and rehabilitation, concrete, soils, geotechnical and geoenvironmental engineering, groundwater and hydrology, environmental engineering, water distribution systems and rivers, lakes and coastal engineering. A state of the art server room facilitates software modeling in all areas. In addition, researchers and students have access to the University's High Performance Computing Virtual Laboratory and to facilities located in other University departments and at the Royal Military College of Canada. There are 2 workshops and an instrumentation shop to service all areas of research.

A 380m2 high bay structures laboratory with strong floor, a 380m2 low bay testing laboratory, a concrete laboratory and a state-of-the-art materials testing laboratory are equipped with various loading systems for testing structures, structural components and materials. Two closed-loop servo-hydraulic power supplies drive 7 dynamic actuators ranging from 100kN to 2000kN for static and dynamic load testing. In addition, a 2000kN concrete cylinder tester, a 100kN and a 1000kN universal testing machine and a 600kN universal testing machine equipped with a muffle furnace for high temperature materials testing are available. Five programmable environmental chambers ranging in size from 10m2 to 38m2 are equipped for freeze-thaw, wet-conditioning/curing and cold temperature testing.

Laboratory facilities totaling 1900m2 are available for research into rivers, lakes and coastal engineering and fluid mechanics. The water research laboratory is equipped with 3 wave flumes with programmable wave generators, sediment transfer flume, and a laser laboratory and a 20m internal wave flume and a 1m diameter rotating table, for research on environmental and geophysical fluid dynamics. Extensive use is made of state-of-the-art measuring equipment, including ADV's, LIF and PIV used in hydrodynamics studies. The laboratory is equipped with an 8-inch pump which supplies a constant head water distribution pipe network for experimental testing in a 175m2 model river basin (used in research on river morphology and river morphodynamics), a 10m-long tilting flume for open-channel flow studies, and a 2m-long recirculating sediment transport flume.

A 420m2 geoengineering laboratory and a 435m2 geotechnical/geoenvironmental laboratory complex are well equipped to carry out unique physical model testing. Facilities include a world class Geosynthetic Landfill Liner Simulator laboratory, an

analytical laboratory, geosynthetic aging equipment and a geotechnical materials laboratory. The test pit located at West Campus is the only facility in North America capable of testing a range of buried infrastructure systems as well as conventional and trenchless construction processes at scale. A 20m3 landslide testing facility located in the water research laboratory is available and is capable of modeling tsunami/landslide interactions.

The environmental laboratory complex is equipped to carry out studies in water quality, water treatment, groundwater, hydrology of fractured rock, bioreactor systems, water distribution systems and human health studies. A 360m2 laboratory complex includes two Level-2 biosafety laboratories, a field staging laboratory, environmental chambers, pilot plant laboratory, analytical laboratory, a clean water testing laboratory and general wet lab facilities. There are 3 fully equipped field research trailers available for hydrology field testing and various field equipment for water treatment and biological systems field studies.A 70 m2 drinking water discolouration laboratory consisting of two 200m long, 4-inch diameter pipe loops and wet laboratory is a stand-alone facility housed at the West Campus water research laboratory.

Financial Assistance

Qualified first class students are recommended for university scholarships and bursaries, although the number of scholarships which can be awarded is limited. Research students are generally supported through Research Assistantships administered under the regulations of the awarding agency. Qualified students will also be considered for Teaching Assistantships. Specific details of funding arrangements are agreed upon by students and their supervisor(s).

Fields of Research

Research activity in the Department of Civil Engineering is generally classified under two fields: Civil Engineering Environment and Civil Engineering Infrastructure. Environment encompasses the areas of Environmental, Geotechnical, Geoenvironmental and Hydrotechnical Engineering, while Infrastructure comprises the areas of Structural Engineering and Geotechnical Infrastructure. These two fields reflect the growing inter-relationships and collaborations among the areas within the Department, and with other research programs both within and outside the University.

Civil Engineering Environment

Environment research is directed toward surface water quality, source water protection, groundwater quality, and subsurface remediation.

In the areas of surface water quality, source water protection and biotechnological processes, current topics of investigation include use of natural/engineered biological systems for water quality control in traditional and innovative on-site applications, and the use of integrated environmental management techniques for the control of surface water degradation resulting from urban storm runoff. Research projects are carried out in collaboration with faculty in Civil Engineering and other Queen's departments, and with local and regional consulting firms and government agencies. Many projects are conducted at regional field and demonstration facilities.

Geoenvironmental engineering research involves the development of design concepts, computer modelling, laboratory testing and field monitoring relating to the design of landfills. This includes the examination of clay and geomembrane liners, primary and secondary leachate collection system (both granular and geosynthetic) aging and contaminant migration through berm systems.

In the area of subsurface water quality, research is being directed at the development of numerical models to simulate multiphase/multi-component flow and transport in both porous and fractured media, as well as the investigation of remedial technologies for the clean-up of chemical spill sites contaminated by hazardous industrial liquids such as PCB oils, jet fuel, and chlorinated solvents. Research is also conducted on the development of new site characterization techniques including new hydraulic and tracer testing methods. Collaborative research is carried out within Queen's with the Biology, Chemistry and Chemical Engineering Departments, School of Urban and Regional Planning and outside of Queen's with International Consortiums.

Geotechnical research is involved in studies of the stress-strain behaviour of soils, the influence of repeated loadings on soils, the influence of frost heaving on natural and stabilized soils, the performance of railroad track ballasts and fills, slope stability and earth dams. State-of-the-art computer facilities are used in modelling the behaviour of geosynthetics, reinforced walls, slopes and embankments. Modelling also plays a key role in work on soft ground tunnelling. The existence of coastal engineering, mining engineering and engineering geology at Queen's provides opportunities for interdisciplinary research. Waste management and contaminant control are areas of growing research needs and are areas of current expansion of the geotechnical research carried out at Queen's.

Hydrotechnical research includes the areas of lake dynamics, fluvial hydraulics, river engineering and pipelinecoastal engineering. A common theme in many of these areas is sediment motion, which requires the application of fluid mechanics, physical modelling and mathematical modelling to both steady and oscillating conditions. Research is also underway into the evaluation and mitigation of short and long term anthropogenic impacts on rivers, lakes and estuaries, including physical impacts such as channel incision, increased bank erosion, etc., and environmental impacts such as hypoxia, harmful algae blooms and loss of quality of the aquatic environment for animal species. Further research topics include river and coastal hydrodynamics and power generation, and long term coastal erosion and protection. Both physical modeling and advanced numerical modeling are used, and often conducted in collaboration with faculty in other areas of civil engineering (environmental, geotechnical and structural), other departments at Queen's (Mechanical Engineering, Biology, Chemistry and Mathematics and Statistics) and other research institutes (National Water Research Institute and National Research Council).

Civil Engineering Infrastructure

The Structures Group currently undertakes research in the areas of (i) using novel and sustainable materials for new construction, (ii) retrofitting of existing structures, (iii) the performance of structures in extreme temperatures and (iv) structural health monitoring. Research projects in the area of novel materials include the use of FRPs for stay-in place formwork for reinforced concrete construction. The use of straw bales as both an energy efficient and environmentally friendly alternative to traditional construction techniques is also an on-going topic of interest. The group has conducted pioneering research into the use of FRPs for strengthening of structures, including the use of prestressed FRPs for efficient flexural strengthening. Current research projects in this area seek to investigate if FRP can enhance the buckling and flexural strength of steel members. The group also has a long standing research collaboration with the National Research Council of Canada that seeks to better understand the performance of both reinforced and retrofitted concrete structures in fire. Research projects in the area of structural health monitoring aim to investigate the link between deterioration and structural capacity through the application of advanced measurement systems for both above ground and buried infrastructure. The structures group conducts a number of these research projects in co-operation with both industrial and government partners including the Ministry of Transportation Ontario and Transport Canada.

Programs of Study

Applicants are accepted into a Master's or Doctoral Program under the general regulations of the School of Graduate Studies providing they also satisfy the requirements of the Department. Normally, the minimum Departmental requirements are a four-year Bachelor's degree with a standing in the mid B range (70% graduating average or a ranking in the top third of the graduating class where number grades are not available).

Applicants with a Bachelors degree in a cognate science may be admitted, at the discretion of the department, to the Master's degree program.

All M.A.Sc. and Ph.D. students must successfully complete CIVL-801, a non-credit course in laboratory safety, at the first opportunity after their initial registration. M.Eng. students who are not engaged in laboratory project work are not required to take CIVL-801. Admission to the course is restricted to graduate students enrolled in Civil Engineering only.

Master's Degrees

Master of Engineering (M.Eng.) Program: The requirements are 8 term-length courses. The student must select a minimum of four term-length courses from the Department of Civil Engineering. A maximum of 2 term-length 400-level courses may be taken.

Master of Applied Science (M.A.Sc.) Program: The minimum requirements for completion are four term length graduate courses, research and a thesis.

One senior (400-series) under-graduate course is acceptable as equivalent to a graduate course.

Students whose undergraduate degrees are not in Civil Engineering may be admitted at the discretion of the potential supervisor. Make-up courses in particular areas of undergraduate Civil Engineering may be required and one of these may or may not contribute to the course requirements.

Doctor of Philosophy

The minimum requirements for the program are four term-length courses beyond the Master's degree (at least one of these courses must be taken outside the Department), research and a thesis. Normally one senior (400-level) undergraduate course from another department may be substituted for a graduate course.

Comprehensive examinations must be completed within the first 18 months of registration. The objective of these examinations are to establish to the satisfaction of the Department that the student has a sound proposal for Ph.D. research, an effective grasp of his/her main and related areas of study and the ability to handle facts, new ideas, and concepts at the Ph.D. level. Details of these comprehensive examinations are available upon request from the Graduate Assistant in the Department and can also be found on the Departmental website.

CLASSICS

Head
Griffith, R.D.

Graduate Coordinator
Lehoux, D.

Professor
Colivicchi, F., Griffith, R.D., Lehoux, D.

Associate Professor
Foley, A.M., Kavanagh, B.J., Reeves, M.B.

Assistant Professor
Cummings, M.S.

Professor Emeritus
Hagel, D.K., Hope-Simpson, R., Marshall, A.J., Schroeder, F.M.

Cross-Appointed Faculty
Ascough, R., Bevan, G., D'Elia, A., Greenfield, R.

Adjunct Faculty
Zaccagnino, C.

Departmental Facilities

The Department of Classics is located on the fifth floor of John Watson Hall, a fully-wireless facility which houses our reference collection, seminar room, departmental lounge and faculty offices. Graduate students also have access to a shared Teaching Assistant office where they can meet with undergraduate students as part of their TA duties.

In addition to our own reference collection, the Stauffer Library has substantial holdings in art, archaeology, classical literature, history and philosophy.Also available are publications in epigraphy and papyrology, and foreign periodicals.The Law Library contains resources for the study of ancient law.

Graduate Student Support

Assistance is available through the Ontario Graduate Scholarship system. The university offers a number of senior fellowships, Queen's Graduate Awards and other support for students in Masters' programs. Suitably qualified students are also appointed to Departmental Teaching Assistantships.

The Classics Department offers additional financial support to successful applicants through the Alexander and Ian Vorres Travel Fellowship, the Classics Travel Grant, and the Ross Kilpatrick Student Initiatives Fund competition processes.

Fields of Research

The Department of Classics offers graduate instruction and opportunities for research in 2 fields:

- Greek and Roman Literature, History and Archaeology
- Classical Studies and Archaeology

Degree Program

Master of Arts

Applicants are accepted under the General Regulations of the School of Graduate Studies. Students must, however, as a minimum, show a strong upper second class standing in the upper years of their B.A. programs.

Applicants to our Greek and Roman Literature, History and Archaeology field should have a good knowledge of Greek and Latin, and are required to take at least 6.0 language credits (Greek and/or Latin) at the graduate level. Applicants who need to supplement their experience in the languages may be accepted on a preparatory basis and arrangements made for supplementary language courses.

Students in either field are required to take CLAS-800 (0.0 units) and CLAS-802*(3.0 units).

Pattern I: Thesis

Students take four term-length courses (12.0 units) and submit a thesis (CLAS-899) of a recommended length of 100 pp. on a topic chosen in consultation with the thesis

supervisor. The thesis will be subject to examination under the general regulations of the School of Graduate Studies.

Pattern II: Major Research Paper (Master's Essay) or Research Project

Students take six term-length courses (18.0 units) and submit either a Master's Essay (CLAS-898) of a recommended length of 50 pp, or a Research Project (CLAS-898) with an accompanying essay of no less than 25pp., that explicates the methodology and advances an interpretation of the results. The Essay or Project will not be subject to an oral defence but will be read and approved by one member of the department in addition to the essay supervisor, and must show the capacity for critical and analytical research and reflect the state of scholarship in the subject.

Pattern II is recommended for students in the Classical Studies and Archaeology field, but is also available to students in the Greek and Roman Literature, History and Archaeology field.

Modern Language Requirement

Before completing the thesis, major research paper or project, students shall demonstrate to the department the ability to read and comprehend one of the languages of modern scholarship, normally French or German. A written translation test may be taken at any time during the first year of graduate study. The requirement may also be satisfied by achieving undergraduate standing with a year-length course, or Ontario Academic Credit or equivalent.

COMPUTATIONAL SCIENCE AND ENGINEERING

Director
A. Pollard, Mechanical and Materials Engineering

Associated Departments, Centres and Schools
Biochemistry, Biology, Chemical Engineering, Chemistry, Civil Engineering, Community Health & Epidemiology, Computing, Economics, Electrical & Computer Engineering, Geography, Geological Sciences and Geological Engineering, Mathematics & Statistics, Mechanical & Materials Engineering, Mining, Neuroscience Studies, Physics, Engineering Physics and Astronomy, Psychology

Please refer to the QCSE website for an up-to-date list of associated faculty members from within each department listed above.

Overview

Designed to enhance the value of your master's degree, the specialization in Computational Science and Engineering (CSE) teaches you the latest methods for applying the power of high-performance computing to scientific problems in your area of study. From advanced numerical analysis, mathematical modelling and simulation, and parallel programming, these methods support and enhance more traditional approaches based on theory and experimentation.

Students accepted to one of the associated ("home") departments Master's degree programs will have the option of completing their degree with a specialization in Computational Science and Engineering. Students who complete this specialization will have their transcript amended to read that their degree was earned "with a specialization in computational science and engineering."

Registration and Program Requirements

Students interested in completing the specialization should contact the Graduate Coordinator in their "home" department and complete an enrollment form.

To complete a specialization in computational science and engineering students must satisfy the following five requirements:

a. Complete the coursework, thesis and other requirements of the associated ("home") program in which they enroll. Note that each participating department determines how the Computational Science and Engineering courses relate to their particular master's degree course requirements.
b. Pass the new "Fundamentals of Computational Science" (QCSE 810*) graduate course.
c. Pass the new "High Performance Computing and Its Applications" graduate course (QCSE 811*).
d. Participate in the new Computational Science Colloquium (QCSE 888*).
e. Undertake a thesis or Pattern II project or essay that applies or contributes to the computational approach in their home discipline.

Completion of the home department's requirement for the research project (and notification by the Graduate Coordinator) is necessary but not sufficient to satisfy this requirement. In addition, a faculty member associated with the Queen's CSE must write a letter confirming that the research project does contribute to the computational approach in the discipline. Normally the thesis/project/essay would be supervised by an associated faculty member. If not, the student and their supervisor can identify a faculty member familiar with the work to confirm the contribution to Computational Science and Engineering.

COMPUTING

Director
Hassanein, H.S.

Coordinator of Graduate Studies
Stewart, J.

Professor
Akl, S.G.,Blostein, D., Cordy, J.R., Dingel, J., Ellis, R.E. , Fichtinger, G., Graham, T.C.N.[1], Hassan, A.E., Martin, T.P., Rappaport, D., Salomaa, K.T., Skillicorn, D.B., Stewart, J., Vertegaal, R.P.H., Zulkerine, M.

Associate Professor
Dawes, R.W., Lamb, D.A., Mousavi, P.

Assistant Professor
Duan, Q., Dunfield, J., Zulkerine, F.

Professor Emeritus
Crawford, R.G., Glasgow, J.I., Jardine, D.A., Jenkins, M.A., Levison, M., MacEwen, G.H., Shepard, C.D., Tennent, R.D.

Adjunct Professor
Feng, W.

Adjunct Associate Professor
Abolmaesumi, P., Gutwin, C., Jurisica, I., Nasser, N., Shatkay, H., Somogyi, R.

Adjunct Assistant Professor
Alalfi, M., Benkoczi, R., Choudhury, S., Elgazzar, K. Glossop, N., Grant, S., Hasheim, J., Jiang, Z.M., Kunz, M., Ma, B., Nagy, M., Oteafy, S., Posse, E., Schreiner, L.J., Shihab, E., Taha, A., Ungi, T., Weldermarlam, K., Zouaq, A., Zulkernine, F.

Cross-Appointed
Blohm, G., Dean, T.R., Greenspan, M., Hashtrudi-Zaad, K., Kelly, D., Knight, S., Lederman, S.J., Lessard, G., Maslove, D., Mozersky, J., Poppenk, J., Redfearn, D., Rudan, J., Rudie, K., Salay, N., Troje, N., Winn, L., Zou, Y.

1 - On leave July 2018-June 2019

Departmental Facilities

The School of Computing graduate facilities consist of network of Macs, PCs, SGI and Sun workstations with the main infrastructure supported by Sun servers. The School's network of 100 computers support the research laboratories in the fields of study described below. The laboratories contain specialized equipment such as audio and video equipment, robotic equipment, eye tracking equipment, ultra sound machine and tracking systems for surgical tools. Undergraduate teaching facilities include four laboratories with 175 PCs supporting a Win XP and Linux environment, 24 Sun workstations and Sun servers for the main infrastructure. There is a Human Media laboratory consisting of five Macs with tablets and digital video cameras.

Graduate Student Support

For information concerning financial aid, students are advised to consult with the School of Computing or the School of Graduate Studies.

Fields of Study

The school's research and course offerings emphasize three broad areas of computing science:

1. **Computer Systems:** including the topics of computer architecture, software engineering, design and implementation of programming languages, operating systems, program verification and analysis, the software/hardware interface, computer networks, distributed systems, data security, and Grids. The ULSS graduate stream (Ultra-Large-Scale Software Systems) is part of the Computer Systems field.
2. **Theory of Computation:** including the topics of computability, complexity of computations, algorithm design and analysis, parallel computation, graph theory, computational geometry, array theory, theory of programming languages, logic, cryptology, Formal Methods.
3. **Applications:** including the topics of information storage and retrieval, database organization and management, management information systems, computer-assisted surgery, computer vision, biomedical computing, human-computer interaction, artificial intelligence, cognitive science, object editing, graphics,

image processing, music, bioinformatics, molecular scene analysis, pattern recognition and Data and Text Mining.

Programs of Admission

Applicants are admitted in accordance with the general regulations of the School of Graduate Studies.

Master of Science

Applicants with a variety of backgrounds in computing science will be considered. A fully qualified student should have knowledge at the undergraduate level equivalent to having completed the required courses in the B.Sc. program with a major in Computing by Queen's.

The School encourages the enrolment of students from other disciplines in the M.Sc. program. They must have an honours bachelor or equivalent degree with high standing and some computing science or equivalent experience. Such a student is accepted as a preparatory student and undertakes a preliminary year of study that fulfills the background requirements. This is an intensive year of study designed for first- class students who are highly motivated to learn a second discipline. On successful completion of the preliminary year a student may undertake either the research or non-research pattern degree program described below. Applicants whose background is lacking only some of the above-mentioned material will be assigned a program of study on an individual basis.

The degree program is based either on a research or a non-research pattern. The requirements for the research pattern degree are: CISC-897 and four half-courses at the 800 level (excluding CISC-810 and CISC-885*), together with a thesis which is considered to constitute one half of the work for the degree. Students in the ULSS stream take CISC-885* in place of CISC-897.

The non-research M.Sc. program is based either on a project pattern or a course work pattern. Under the project pattern program, a student is required to complete seven half course credits at the 800 level (excluding CISC-810), one of which may be CISC-897, and a project (CISC-898). For students in the ULSS stream the seven half courses must include CISC-885* and MAY NOT include CISC-897. At least one course must be chosen from each of the following areas: Computer Systems, Theory of Computation, and Applications. The courses currently offered in these areas are listed below. The project culminates in a written report which will be examined by a board consisting of the

supervisor, one other member of the department and the head of the department (or delegate).

The requirements for the course work pattern program are eight half course credits at the 800 level (excluding CISC-810 and CISC-897). At least one course must be chosen from each of the following areas: Computer Systems, Theory of Computation, and Applications.

The selection of courses is subject to School approval and at the beginning of the program the student is required to submit a plan of study to the Coordinator of Graduate Studies.

Programs will be selected in consultation with the Coordinator of Graduate Studies.

- **Double Numbered Courses:** The following courses are offered jointly with senior undergraduate courses: CISC-832*, CISC-841*, CISC-854*, CISC-858*.
- **Computer Systems Courses:** CISC-825*, CISC-833 *, CISC-834*,CISC-835*, CISC-836*, CISC-837*, CISC-838*, CISC-841*, CISC-842*, CISC-845*, CISC-846*, CISC-847*, CISC-848*, CISC-853*, CISC-858*, CISC-860*, CISC-880*, CISC-883*, CISC-884*.
- **Theory of Computation Courses:** CISC-865*, CISC-868*, CISC-869*, CISC-870*, CISC-871*, CISC-872*, CISC-876*, CISC-879*.
- **Applications Courses:** CISC-832 *, CISC-839*, CISC-850*, CISC-854*, CISC-856*, CISC-857*, CISC-859*, CISC-861*, CISC-873*, CISC-874*, CISC-875*, CISC-877*, CISC-878*,CISC-881*, CISC-882*, CISC-888*.

Doctor of Philosophy

Applicants should have completed an M.Sc. in Computing Science or a closely related field at an established university. Candidates will normally enter the program at the beginning of the Fall term.

Requirements

1. **Breadth:** Candidates demonstrate breadth of knowledge by presenting a token in each of ten subjects normally selected from the three areas listed under fields of Study, as well as multidisciplinary courses, with no less than 2 tokens from any of the 3 areas. A token is a graduate course, or examination or a project, or a thesis, all at the Master's level in Computing Science. Although there are no formal course requirements, candidates should expect that some courses may be

necessary to satisfy the breadth requirement. For students in the ULSS stream the breadth tokens must include CISC-883* and CISC-885*.

2. **Comprehensive Examination:** Candidates demonstrate depth of knowledge by presenting a research proposal in the area in which they intend to pursue research. The research proposal should normally include a critical survey of the area, description of progress to date and of results sought. The research proposal is defended orally before an examining committee.
3. **Thesis:** The research described in the thesis should constitute a significant contribution to knowledge and must be of such quality as to warrant its publication in a recognized journal.

CULTURAL STUDIES

Director
Lord, S.

Steering Committee
Brison, J., Davies, J., Guenther, L., Lord, S., Naaman, D., Pegley, K., Renihan, C.

Faculty
L. Aarssen, M.L. Adams, H. Adelman, S. Aiken, B. Allan, J. Allen, B. Amani, R. Ascough, S. Aziz, S. Babbitt, S. Belanger, K. Bertrand, A. Boutilier, J. Brison, A. Burfoot, S. Burney, L. Cameron, C. Caron, H. Castleden, D. Chamberlain, A. Cockfield, L. Daneshemend, J. Davidson, C. Davies, J. Davies, R. Day, P. Dickey-Young, K. Dubinsky, M. Epprecht, P. Fachinger, T. Fort, A. Goebel, E. Goldberg, L. Guenther, M. Hand, E. Hill, J. Hosek, A. Husain, A. Jack-Davies, L. Jessup, G. Kibbins, S. King, A. Kobayashi, V. Kuhlmeier, R. Kukreja, K. Lahey, F. Leeming, J. Lefort-Favreau, C. Levine-Rasky, M. Little, S. Lord, R. Lovelace, G. Lovell, D. Lyon, E. MacDonald, S. MacKenzie, B. Martyn, J. Masuda, S. Matrix, S. McKegney, K. McKittrick, J. Mennell, J. Miller, A. Morehead, S. Morgensen, S. Mosurinjohn, D. Murakami Wood, L. Murray, D. Naaman, K. Pegley, E. Pelstring, E. Power, K. Renders, C. Renihan, N. Rewa, D. Robinson, I. Robinson, M. Rogalsky, S. Rutherford, T. Salah, C. Palomares Salas, J. Salverson, A. Salzmann, D. Santeramo, J. Scott, S. Sismondo, C. Smart, G.E. Smith, M. Smith, S. Smith, S. Srivastava, P. Thompson, J. Tolmie, A. Varadharajan, N. Vorano, B. Walker, C. Walker, M. Walker, M. Wallace, A. Weldemichael, G. Willmott, C. Zaccagnino, K. Zaiontz

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Purpose and Philosophy

Cultural Studies is an emphatically interdisciplinary area of inquiry that intersects the humanities, science studies, social sciences, and the arts. Its researchers theorize the forces that shape the lived reality of people in the 21st century.

Drawing on a range of practices, researchers investigate values, cultural processes and objects, economic and social relations, institutions and identities.

What distinguishes Cultural Studies from other approaches to the study of culture is its recognition that no single disciplinary approach can get at the complexity of cultural forms and its emphasis on power, social justice and social change.

Necessarily self-reflexive, Cultural Studies draws on a range of methods and critical theories. It offers opportunities to break down conventional divisions between academia and activism, between theoretical critique and cultural production.

Comprising 92 distinguished faculty from 22 disciplines to offer an innovative program at the M.A. and Ph.D. levels, Cultural Studies at Queen's is committed to a diversity of students and faculty and to the global expertise that they bring to the cultural and academic fields.

Our goal is to create an intellectual environment that combines a high level of academic scholarship and an ongoing meaningful engagement with cultural issues relevant to local and global communities.

Financial Support

The Cultural Studies Program offers support for each full-time student during the first two years in the masters program and the first four years in the doctoral program. Financial support is derived from university scholarships and research and teaching assistantships.

Applicants are encouraged to apply for the national and provincial awards listed earlier in this calendar. Attention is drawn to the submission dates for these awards, which normally fall well before the deadline for applications to the Cultural Studies Program, e.g. Commonwealth Fellowships in October, Ontario Graduate Scholarships, and Social Sciences and Humanities Research Council Fellowships in November.

Fields of Research

The program integrates the range of theoretical and practical approaches used within Cultural Studies, and fosters scholarship in both historical and contemporary fields of research. The Ph.D .program has been designed around four field areas and offers a project component that allows those who choose to do so to develop their cultural practice (e.g. filmmaking or curating) or to engage in work in the community as part of their studies. Graduates will be prepared to continue in academic work or to work as critically engaged citizens in a variety of cultural environments. The four fields offered in the PhD program are:

1. Communication, Media and Technologies
2. Globalization, Nationalisms and Cultural Citizenship
3. Social Movements

4. Bodies and Identities

It is our intention that analyses of class, race, and gender, alongside other primary axes of social difference and inequality, will pervade all teaching and research conducted in these fields.

Programs of Study

Applications are accepted under the general regulations of the School of Graduate Studies. Admission to the masters program is normally limited to students with a minimum strong upper second-class standing in the upper years of their B.A. programs. Admission to the Ph.D. is normally limited to applicants with first class standing on their Masters work. Masters students in the fourth term may apply for promotion to the PhD program.

The master's program leads to the degree of Master of Arts. The doctoral program leads to the degree of Ph.D. In addition to coursework and participation in the bi-weekly seminar series, the requirements for the M.A. degree include options for students: Pattern I requires students to write a thesis or undertake a major research project, Pattern II requires students to either write a research essay or undertake a minor project. The Ph.D. includes a project option in addition to a dissertation, required coursework and participation in the bi-weekly seminar series.

Language Requirements: Students will be encouraged to gain facility in a language other than English that pertains particularly to their own scholarly and career interests. Where facility in a language is necessary to research in the candidate's field, the student will be required to acquire it. In such cases, the requirement will be determined by the student's supervisory committee. In such cases, students will be required to pass a language proficiency test before being allowed to undertake their field work.

Master of Arts

The program offers two options for the masters degree:

M.A. Pattern I: four full-term courses plus CUST-802, plus a 20,000 -25,000 word thesis OR a major project (CUST-899).

M.A. Pattern II: six full-term courses plus CUST-802, plus a 10,000-12,000 word research essay OR a minor project (CUST-898).

The program offers five core courses: one on Cultural Studies Theory, one on Critical Methodology, one on Cultural Studies Historiography, one on Research-Creation Methodologies and one on Community-Based Research (see Courses of Instruction section for descriptions). Students are required to complete at least two of the five.

All other courses will be electives, drawn from the list of available courses issued each year.

M.A. Project Option

This option allows students to create a cultural product (exhibition, performance, film, play, text) or to become involved in community-based work as a means of partially fulfilling the requirements for an M.A. Students taking the project option are required to provide an analytic-theoretical commentary based on the work, its conditions of production, and its implications for academic scholarship.

M.A. Proposal

The thesis or major project topic must be chosen in consultation with the student's program advisor. In consultation with the supervisor, the student will select a second reader for the thesis or project. After preliminary research, a student must submit a proposal for approval. The proposal will be discussed and subsequently approved by the supervisor and the second reader in a meeting. Students are expected to complete and defend their M.A. thesis or major project within two years of starting the program.

Doctor of Philosophy

Year 1

Doctoral students are expected to take a minimum of four one-term graduate courses in their first year, at least two of which must be from the five core courses offered by the program (see Course section for descriptions), plus CUST-902. Doctoral students with a Queen's M.A. in Cultural Studies need only take two courses, plus CUST-902. Their two courses will be drawn from the list of available courses, and determined in consultation with supervisor and/or program director.

Year 2

At the beginning of the second year, each student, in consultation with the student’s program advisor, must finalize arrangements with a supervisor and two other faculty members for the qualifying examination and Ph.D. thesis. Those faculty members

comprise the supervisory committee for the qualifying exam and for the thesis and monitor the student's progress.

To complete the qualifying examination, the student will submit a 1000 word proposal for the qualifying exam and an annotated bibliography. Upon approval by the committee, the student will write a 3500 to 5000 word exam in a two-week period, based on questions created by the examining committee, which address the theoretical, methodological, and substantive aspects of the dissertation. If the student fails the exam (which occurs when two or more examiners say the exam has been failed), the student has one chance to re-write it within the next six months.

By the end of the second year, the student will have completed the qualifying examination and will have commenced a Special Research Seminar, reading with a supervisor in the area of an intended thesis or project in order to prepare a thesis or project proposal. The thesis or project proposal must identify the object of study, research method, theoretical framework, and must include an annotated bibliography of works relevant to the chosen area(s) of study. For the project option, a clear and detailed description of how the student will meet the requirements for that option must also be included.

Ph.D. Project Option

This option allows students to create a cultural product (exhibition, performance, film, play, text) or become involved in community-based work as a means of partially fulfilling the requirements for a Ph.D. Students taking the project option are required to provide an analytic-theoretical commentary based on the work, its conditions of production, and its implications for academic scholarship.

This option is comprised of the same course work, plus a project of a scale and scope that may be completed within the time it takes to write a doctoral thesis, i.e. three years. The analytic component will be comprised of a paper of approximately 20,000 -25,000 words in length.

Ph.D. Proposal

All students are required to prepare a thesis or project proposal. Proposals are defended before the student's thesis committee. The examination focuses upon the relevant theoretical, methodological and substantive areas germane to the student's program. It also tests the student's understanding of the discipline, the viability, scope and coherence of the thesis proposal and the preparedness of the candidate to undertake the

proposed research. All students are required to show the relation of the research to the program's objectives, available faculty expertise, and to the relevant academic literature. Students in the project option whose work will involve community collaborators must show that they have appropriate participants, and they must justify their choice of participants given the theoretical, political, and methodological contexts of their thesis work.

The student will have the opportunity to re-write the proposal and defend it twice.

After the thesis proposal is approved, thesis or project research should commence. Students are expected to complete and defend their thesis or project within four years of starting the program.

Elective Courses

The elective course component of the program is designed to foster in-depth study in one or more areas and to provide flexibility to meet diverse student interests and career goals. Students can select their electives from the course offerings issued each year by the program.

EARTH AND ENERGY RESOURCES LEADERSHIP

Interim Director
Remenda, V.

Professor
Hutchinson, D.J., Jamieson, H.E., Olivo, G.R.

Associate Professor
von Hlatky, Stéfanie

Continuing Adjunct
Detomasi, D., Harrap, R.M.

Adjunct (Group 1) Associate Professor
Doggett, M.D.

Adjunct (Group 1) Assistant Professor
Kashi, B., Taylor, I.L., Lintner, A.M., MacKay, P.A.,

Lecturer
Hostyn, J.

Program of Study

The Master program in Earth and Energy Resources Leadership (MEERL) program is 20 months (5 terms) in length, part time, and typically completed while the student remains employed full time.

Students must successfully complete 30 credit units comprised of 10 courses – 7 core courses of 3 units each and a selection of 3 electives out of 4 offered, at 3 units each. For most of the courses, the delivery will be a combination of multiple asynchronous lectures and online tutorials, and several synchronous webinars to summarize the learning outcomes, conduct class discussions, review key concepts, kick-off case studies, and have group presentations.
The courses EERL-801, EERL-802, EERL-803, EERL-805 are offered during the 1st and 2nd terms. EERL-804, EERL-806 and EERL-810 are offered during the 3rd term and EERL-807, EERL-808, EERL-809 and EERL-811 are offered in the 4th and 5th terms.

Degree requirements are to be delivered via a blended learning program, containing both residential and online components. The overall program will be about an 80:20 online: residential mix for conventional lecture, applied/experiential learning, case analysis, integrated learning, and project work.

Students will begin the program with an intensive residential session of 5 full days, during which they will be introduced to all the courses and given an overview of specific topics that will be covered in greater depth throughout the remainder of the program. Students will complete the residential portion of the first two courses - *Resource Life Cycle Overview and Strategic Leadership*, with the remainder of the Leadership course being completed in the first term and the Resource Life Cycle being completed in the second term. These two courses provide the frame for the entire program. A second residential session will occur in summer term during which students will complete the residential course *Economic Essentials* (Part II), with Part I being delivered entirely online in the preceding Winter term. The fifth term is when electives and an online core course will be completed. Should the student choose as electives, the *Field-based Synthesis* course and/or *The Energy Life Cycle Track*, these will require an approximate 10 day face-to-face site visit.

ECONOMICS

Head
Lloyd-Ellis, H.

Associate Head
Head, A.C.

Coordinator of Graduate Studies
Majumdar, S.

Professor
Bergin, J., Carmichael, H.L., Ferrall, C., Gregory, A.W., Hartwick, J.M., Head, A.C., Lapham, B.J., Lewis, F.D., Lloyd-Ellis, H., MacKinnon, J.G., Milne, F., Nielsen, M., Smith, G.W., Wang, R., Ware, R., Zabojnik, J.

Associate Professor
Cotton, C., Garvie, D., Keay, I., Koeppl, T., Majumdar, S.,Sun, A., Viero, M-L.

Assistant Professor
Abbott, B., Cozzi, M., Jaworski, T.

Professor Emeritus
Beach, C.M., Boadway, R.W., Courchene, T.J., Usher, D.

Cross-Appointed
Ding, W., Lehrer, S.F., Neave, E.H., Pohl, V., Suo, W.

Adjunct Faculty
Abbott, M.G., Cromb, I., Imai, S., Jenkins, G., Kuo, G.

Features of Interest

The Department of Economics occupies the second and third floor of Dunning Hall, and two wings in Mackintosh-Corry Hall. These premises provide classrooms, seminar rooms, and two computing labs, as well as conference facilities, graduate student study space and a reading room.

Queen's has a relatively decentralized library although most of what is of interest to economics students will be found in the Joseph S. Stauffer Library, directly across Union Street from Dunning Hall. Reserve readings are on the third floor of Stauffer and the Government Documents Unit is on the lower floor. Other specialized locations that may be of interest include the May Ball Library for policy studies and industrial relations, the Mathematics Library in Jeffery Hall and the Law Library (which has duplicate copies of some works in economics). An extensive collection of pre-publication discussion papers in economics is available in the Malcolm Urquhart Reading Room on the third floor of Dunning Hall.

Information and Technology Services (ITS) and the Economics Department (QED) together provide a wide variety of computing services that are accessible to Economics graduate students. The Department has six servers running Linux. All graduate students have access to the main server, qed.econ.queensu.ca, as well as other workstations. The Department's computing representative provides assistance with many computing problems. As well as Internet access, the Department maintains various software packages on these servers, and computer advisors (upper-year graduate students) are available to assist students learning new programs. Workshops and seminars on internet tools, operating systems, and web publishing are available from ITS throughout the year. Also in close proximity to graduate student offices are approximately 60 PC's loaded with popular internet, word processing, and spreadsheet packages.

Institutes

The continuing dialogue and debate between academic economists and practicing policy-makers from industry and government is just part of the interest to students of the conferences, workshops and publications sponsored by the John Deutsch Institute for the Study of Economic Policy. Also within the department, the Institute for Economic Research publishes a discussion paper series at a present level of about sixty new papers each year, and a regular program of staff/student seminars and workshops, active all year round, frequently brings economists of international repute to Queen's. Elsewhere on campus, the Industrial Relations Centre, the Institute of Intergovernmental Relations, the School of Policy Studies and the Centre for Resource Studies all do work of interest to students of economics.

The department also operates an active placement service to help its students obtain suitable positions as professional economists after graduation.

Financial Aid

Primary sources are described in the calendar section entitled Fellowships, Assistantships and Loans. The department has some resources of its own from which to make awards for academic merit, but these awards cannot be so generous as those offered by Queen's and by governmental, industrial and other grant sources outside the University, and are not numerous enough to assure one to each successful applicant.

The department offers many of its students teaching and/or research assistantships which may be held in addition to a merit award, depending upon the award's conditions of tenure. For further information, please contact the Coordinator of Graduate Studies.

Programs of Study

Applicants for both the master's and doctoral programs are accepted under the general regulations of the School of Graduate Studies. Program of Study and course choice are subject to the review and approval of the Graduate Coordinator.

Doctor of Philosophy

The doctoral program comprises course work, including preparation in economic theory and areas of specialization, comprehensive examinations in micro- and macro-theory, and a doctoral thesis. Students with an honours bachelor's degree (or the equivalent) and a master's degree, both in economics, usually take at least four years to complete the program and must be completed satisfactorily within seven years of initial registration in the program.

The minimum course requirements consist of nine graduate half-courses in the Department of Economics. Students must complete four graduate courses in economic theory (ECON-811*, ECON-813*, ECON-816*, and ECON-817*); two graduate courses in quantitative methods (ECON-850* and ECON-851*);and three 900-level courses with an ECON course code prefix. Students must take a minimum of three half-courses in their first term and three half-courses in their second term of the program.

A cumulative GPA of 3.0 or higher must be maintained on all courses taken towards the Ph.D. degree. This average will be computed on each anniversary of first registration. Students must also satisfy the department that they have an adequate preparation in calculus and linear algebra.

There is no foreign language requirement.

Comprehensive Examinations

All eligible Economics Ph.D. students are required to take both the Microeconomics and Macroeconomics comprehensive examinations no later than September of their second year in the program. All eligible Economics Ph.D. students are required to pass both the Microeconomics and the Macroeconomics comprehensive examinations by June of their second year in the program. The comprehensive examinations are normally offered twice each year; once in early May and once in late August or early September.

All eligible Economics Ph.D. students are also required to submit a research paper that demonstrates readiness to carry out research on a topic on the scale of a Ph.D. dissertation. This paper must be submitted by October of their third year in the program, and all eligible Economics Ph.D. students are required to obtain a Pass on the research paper by February of their third year in the program.

Master of Arts

The master's program normally requires three terms of full-time study. Students entering the master's program with full-time status in the fall must take at least three half-courses in each of the Fall and Winter Terms. The degree may be taken according to one of three program patterns, the requirements for which are as follows:

Program Pattern I

Six half-courses and a Master's Thesis (ECON-899, which is equivalent to one full course). The courses selected must include ECON-810* Microeconomic Theory, ECON-815* Macroeconomic Theory, ECON-852* Quantitative Methods, and three additional graduate courses in economics.

Program Pattern II

Seven half-courses and a Master's Essay (ECON-898, which is equivalent to one full-course). The courses selected must include ECON-810* Microeconomic Theory, ECON-815* Macroeconomic Theory, ECON-852* Quantitative Methods, and four additional graduate courses in economics. An average grade of 70% will be required in the course work.

The master's essay (ECON-898) will be examined and assigned a percentage grade by a committee composed of the supervisor and one other member of the department. The

average grade of the two committee members will be assigned unless the individual grades differ by more than 5 percentage points. In such a case, the Coordinator of Graduate Studies or his/her delegate will examine the essay and assign a final grade based in part on consultation with the committee members. In the event of a failing grade, revision of the essay or submission of a new essay may be made on the approval of Division V.

Program Pattern III

Eight half-courses. The courses selected must include:

a. one of the following two sequences: (i.) ECON-811* Advanced Microeconomic Theory I, ECON-813* Advanced Microeconomic Theory II and ECON-815* Macroeconomic Theory or (ii.) ECON-816* Advanced Macroeconomic Theory I, ECON-817*Advanced Macroeconomic Theory II and ECON-810* Microeconomic Theory
b. ECON-850* Econometrics I or ECON-852* Quantitative Methods
c. four additional graduate half-courses in Economics

In addition, students must fulfil a mathematics requirement by attending and passing the Graduate Methods Review course.

Students who are admitted to the PhD program after completing Program Pattern III will have advanced standing in the PhD program.

Graduate Diploma in Risk Policy and Regulation

The Graduate Diploma in Risk Policy and Regulation (RPRD) is a four-month program unique in Canada.

To be eligible to be considered for admission, students are required to have at least a B+ in a Master's degree in Economics (MA), a Master's in Financial Economics (MFE), or equivalent qualification.

The courses in this diploma will also be open to doctoral students in the Department of Economics and thus the diploma serves a secondary purpose: to introduce doctoral students to the study of financial risk and policy. It will comprise four compulsory courses:

1. **RPRD-801:** Risk Management Theory and Applications
2. **RPRD-802:** Financial Institutions Theory and Practice

3. **RPRD-803:** Financial Regulation
4. **RPRD-804:** Advanced Topics in Risk Management and Regulation.

Course evaluation will be based on projects, case study analysis, assignments, presentations and examinations. This is a course-based diploma and, therefore, a dissertation or major research paper is not required.

EDUCATION

Dean
Luce-Kapler, R.

Associate Dean of Graduate Studies
Christou, T.

Professor
Bruno-Jofré, R., Cheng, L., Colgan, L., Hill, A.M.[5], Luce-Kapler, R., Myers, M.J., Russell, T.L., Upitis, R.B.[3]

Associate Professor
Berg, D., Bolden, B.[3], Burney, S., Chin, P., Christou, T., Cooper, A.[4], DeLuca, C., Elliott, S., Kutsyuruba, B.[1], MacEachren, E., Pyper, J., Reeve, R.[2], Sharkawy, A., Shurr, J.

Assistant Professor
Ahn, C., Airton, L., Beach, P., Butler, A., Matheson, I., Morcom, L., Searle, M., Timmons, K.

Adjunct Associate
Martin, A.K.

Professor Emeritus
Hutchinson, N., Kirby, J.R., Lee, E., Lewis, M.A., Munby, H., O'Farrell, L., Rees, R., Shulha, L., Smithrim, K., Welch, M., Wilson, R.

Cross-Appointed
Babbitt, S.E., Blouin, D., Côté, J., Duffin, J.M., Lam, P., Laverty, C., Levine-Rasky, C., Stockley, D., Taylor, P.D., Weisberg, M.

1 - On Leave July 2018 - December 2018
2 - On Leave July 2018 - June 2019
3 - On Leave January 2019 - June 2019
4 - On Leave January 2019 - December 2019
5 - Professor Emeritus effective January 1, 2019

Facilities

The Faculty of Education is housed on the West Campus in Duncan McArthur Hall. The facility contains extensive resources to support its academic programs.

The Queen's Education Library is a three-floor facility that supports classroom practice and educational research. It houses nine collections: reference materials; books for young readers; multimedia (DVDs, CDs, puppets, games, kits, posters); Ontario Ministry of Education documents; 200,000 titles including e-book selections relating to the theory and practice of education; new and historic textbooks used in Ontario schools; graduate theses and projects; and 200 print journals that support teachers' professional development. Online indexes provide access to interdisciplinary journals and to 1,000 education-related journals. Multimedia databases include animated picture books, online readers and graphic novels, interactive maps, and video-streaming. The Children's and Young Adult Collection offers award-winning fiction, non-fiction, and picture books that support the Ontario curriculum; all titles on Ontario's Forest of Reading program; and popular graphic novels. Teaching venues include an e-classroom and a Teaching Corner both equipped with SMART Boards.

The Teacher Resource Centre supports classroom teaching with a wide variety of resources for JK to grade 12. The collection includes thousands of videos, DVDs, class sets of novels, kits and hands on classroom material as well as fiction and non-fiction books.

Students, faculty and staff have access to the Internet, Windows-based and Macintosh computers, a library of educational software and specialized peripherals for art, music, design, and multimedia production through E-Services. McArthur Hall also has its own gymnasium for teaching as well as for recreation, laboratories, a drama and art studio, and a technological education wing. In addition, the Faculty is proud of its graduate student facility that was designed to promote an active, engaged community, and enhance quality of life for students. It includes personal and collaborative work areas, specially designed furniture and lighting, a conference room, coffee bar, computers, and printing facilities.

Financial Assistance

Only students who are registered as full-time for the session are eligible for fellowships and other support. Several graduate assistantships are available in the Faculty of

Education. In addition to Queen's awards full-time students should be aware of the following sources of financial assistance:

- Ontario Graduate Scholarship Program
- Social Sciences and Humanities Research Council of Canada (SSHRCC)

Programs of Study

Applications for the M.Ed. and Ph.D. programs should be made in accordance with the general regulations of the School of Graduate Studies.

Master of Education (M.Ed.)

The Master of Education program is designed to develop in its graduates leadership abilities that emerge from critical enquiry including critical reflection, and research and development activity.

Each student is assigned to a program advisor whose responsibilities include developing with the student a program of study that coheres with the student's professional goals and with the program's aims.

The program consists of a minimum credit value of ten half courses. Students select one of two program patterns (see Structure of Graduate Degree Programs). A student's registration must be approved by the assigned Program Advisor, the Associate Dean of Graduate Studies, and the School of Graduate Studies.

Admission Requirements

To be considered for admission to the Master of Education program, applicants must provide evidence of:

i. Professional experience, a B.Ed. degree or its equivalent, and a minimum of a B- average in a Bachelor's degree or its equivalent.
   or
ii. Two years professional or industrial experience, and a minimum of a B- average in a Bachelor's Honours degree or its equivalent.
   or
iii. A B.Ed. degree, and a minimum of a mid-B average in a Bachelor's degree or its equivalent.

iv. Applicants whose native languages do not include English must obtain a passing score in one of the accepted tests of English language proficiency. Information can be found can be found in the General Regulations of the School of Graduate Studies here: International Students.

Special Admissions Requirements

Each year, up to five full-time students will be admitted who have demonstrated exceptional ability to undertake research. These applicants need not have professional teaching experience, nor a B.Ed. degree, but must possess a record of high academic achievement in an Honours degree or its equivalent, and must present courses that constitute preparation for research in education. Prior to admission, applicants in this category must develop a program of study, in Pattern I (thesis route), with a member of Graduate Faculty. The program of study may require more than the normal ten half-courses, and may include courses from other programs of the Faculty of Education. The program of study must be approved by the Graduate Studies and Research Committee of the Faculty of Education before the application can be approved. Persons who are uncertain if they are eligible for admission to the M.Ed. program are encouraged to contact the Graduate Studies and Research Office at the Faculty of Education.

Fields of Study

Students are not required to choose a specific field of study but will work with a program advisor to develop a program that meets their professional goals and research interests.

Program Patterns

- **Pattern I:** A minimum of six half courses (two must be research courses) and a master's thesis (credit value four half courses).
- **Pattern II:** A minimum of eight half courses (one must be a research course) and a master's project (credit value two half courses).

A colloquium must be held before the student begins work on the thesis.

With the approval of the program advisor, the Associate Dean of Graduate Studies and, where applicable, the thesis or project supervisor, a student may:

a. be required to take additional courses from either the graduate offerings of the Faculty of Education, or undergraduate/graduate offerings of the University in support of the thesis (EDUC-899) or project (EDUC-898).

b. be permitted to take up to two half courses from graduate or advanced undergraduate courses offered by other departments of the University.

Courses by Component

a. **Courses:** EDUC-800*, EDUC-801*, EDUC-802*, EDUC-809*, EDUC-810*, EDUC-811*, EDUC-812*, EDUC-813*, EDUC-815*, EDUC-820*, EDUC-821*, EDUC-822*, EDUC-823*, EDUC-824*, EDUC-826*, EDUC-827*, EDUC-828*, EDUC-830*, EDUC-833*, EDUC-842*, EDUC-850*, EDUC-852*, EDUC-855*, EDUC-860*, EDUC-861*, EDUC-862*, EDUC-880*, EDUC-888*, EDUC-896*, EDUC-897*.
b. **Thesis and Project Preparation:** EDUC-890*, EDUC-892*, EDUC-895*.
c. **Thesis and Project:** EDUC-898 , EDUC-899.

Additional Regulations

1. Advanced credit may be granted for up to two graduate half courses taken at another university provided that the courses cohere with the student's program of study, and provided that the request for advance credit is made at the time of application. In no case will credit be granted for courses, which have been credited to another degree or diploma.
2. Full-time students are required to be on campus for three academic terms (usually fall, winter, summer).
3. No student may register in more than two half courses in the summer term.
4. The total number of half courses taken by a student from outside the offerings of the Queen's M.Ed. program may not normally exceed two.
5. Normally, full-time students can anticipate needing between eighteen and twenty-four months in order to complete the degree. Most full-time students will find it possible to complete all course work within the three terms of their full-time year, and to have begun work on the thesis or project. Thesis or project work can be completed in additional terms either on-campus or off-campus. All students are required to complete the degree requirements within five years of initial registration. The minimum period of completion of the courses necessary for graduation is 12 months for full-time students and 24 – 28 months (dependent upon choice of a Master's thesis or Master's project) for part-time students.
6. Additional regulations are published in Graduate Studies in Education: A Handbook.

Dual Master of Education Degree Program

South China Normal University (SCNU) students will first attend one year of the Master of Education program at SCNU and then one year of the Master of Education program at Queen's. Queen's students will first attend one year of the Master of Education program at Queen's and then one year of the Master of Education program at SCNU. For the third year, SCNU and Queen's students will choose to complete their studies (internship course and thesis) either at SCNU or Queen's. The Dual Master's Degree Program is divided into stages, and is to be completed in three (3) years for both SCNU and Queen's students.

SCNU students who participate in the Dual Master's Degree Program must be enrolled on a full-time basis, for the duration of the program, in the Master of Education program at SCNU; they will also be enrolled as full-time students in the Master of Education program at Queen's for the academic period they spend at Queen's and until completion of all degree requirements.

Queen's students who participate in the Dual Master's Degree Program must be enrolled on a full-time basis, for the duration of the program, in the Master of Education program at Queen's; they will also be enrolled in the Master of Education program at SCNU for the academic period they spend at SCNU and until completion of all degree requirements. Queen's students must apply for and receive full time, off campus status to cover the duration of any term or terms spent on location at SCNU.

Students participating in the Dual Master's Degree Program who successfully complete all degree requirements of the Master of Education, Queen's University and the Master of Education, South China Normal University will receive two degrees, one from each participating university.

Admission Requirements

Each institution will nominate candidates for participation in the Dual Master's Degree Program. In addition to the requirement that the candidate must meet the admissions criteria of the home institution, the following criteria must be met for a student to qualify for nomination to the Dual Master's Degree Program:

a. Candidates applying to Queen's as the host institution must meet the admission requirements of the Queen's Master of Education program, including English language proficiency requirements.

b. Candidates applying to SCNU as the host institution must meet the admission requirements for the Master of Education program; the Chinese language requirement is waived for Queen's students.

Students will be nominated based on academic merit, past work and extracurricular experiences, as well as a demonstration of strong motivation to participate in the program.

Additional Regulations

Dual Master's Degree students will be responsible for completing the required immigration procedures needed to pursue studies and the internship course in the country of the host institution. The host institution will provide the necessary information about immigration requirements in the host country, along with admission documents to enable the dual degree-seeking student to apply for permission to study and complete the internship course in the host country.

M.Ed. in World Indigenous Studies in Education (WISE)

This is a part-time blended (on-line and on-campus) program in the field of World Indigenous Studies in Education, which is intended for students with experience in Aboriginal communities. It is designed to develop in its graduates, leadership abilities and theoretical, practical and experiential knowledge. It is directed at increasing research and development capabilities in education, in the community, and its leaders. The program parallels the general M.Ed. but courses are geared specifically to Aboriginal and World Indigenous contexts. Each student is assigned to a program advisor whose responsibilities include developing with the student a program of study that coheres with the student's professional goals and with the program's aims.

The program consists of a minimum credit value of ten half courses. Students select one of two program patterns (see Structure of Graduate Degree Programs). A student's registration must be approved by the assigned Program Advisor, the Associate Dean of Graduate Studies, and the School of Graduate Studies.

Admission Requirements

To be considered for admission to the M.Ed. WISE program, applicants must provide evidence of:

i. Professional experience in Aboriginal and/or world indigenous education or related field, a B.Ed. degree or its equivalent, and a minimum of a B- average in a Bachelor's degree or its equivalent;OR
ii. Two years professional experience in Aboriginal and/or world indigenous education or a related field, and a minimum of a B- average in a Bachelor's Honours degree or its equivalent; OR
iii. A B.Ed. degree and a background in Aboriginal and/or world indigenous issues, and a minimum of a mid-B average in a Bachelor's degree or its equivalent; OR
iv. Demonstrated significant professional experience in Aboriginal and/or world indigenous education or related field, and a minimum of a mid-B average in a Bachelor's degree or its equivalent.

In addition to the above, an applicant must submit two letters of support from respected members of the applicant's Aboriginal or world indigenous community to which they either belong or are related. Since preference will be given to qualified applicants of Aboriginal ancestry (Status, non-Status, Métis, Inuit) applicants may be requested to provide proof of Aboriginal ancestry where applicable. Documentation which provides proof of Aboriginal ancestry may include: a status card, church records, a Métis card, a verification letter from an official Political Territorial Organization (PTO) or First Nations.

Applicants whose native languages do not include English must obtain a passing score in one of the accepted tests of English language proficiency. Information can be found can be found in the General Regulations of the School of Graduate Studies here: International Students.

Provisional status may be applicable for candidates who do not meet the admission requirements as described above. A description of this status can be found in the School of Graduate Studies calendar online.

Program Patterns

- **Pattern I:** A minimum of six half courses (two must be research courses), and a master's thesis (credit value four half-courses).
- **Pattern II:** A minimum of eight half courses (one must be a research course), and a master's project (credit value two half-courses).

With the approval of the program advisor, the Associate Dean of Graduate Studies and, where applicable, the thesis or project supervisor, a student may:

a. be required to take additional courses from either the graduate offerings of the Faculty of Education, or undergraduate/graduate offerings of the University in support of the thesis (EDUC-899) or project (EDUC-898).
b. be permitted to take up to two half courses from graduate (or advanced undergraduate) courses offered by other departments of the University, another university, or the general M.Ed. program with the approval of the advisor, and the Associate Dean of Graduate Studies.

Courses by Component

a. **World Indigenous Studies in Education:** EDUC-870*, EDUC-871*, EDUC-874*, EDUC-877*, EDUC-878*.
b. **Thesis and Project Preparation:** EDUC-872*, EDUC-875*, EDUC-876*.
c. **Thesis and Project:** EDUC-898, EDUC-899.

Additional Regulations

1. Advanced credit may be granted for up to two graduate half courses taken at another university provided that the courses cohere with the student's program of study, and provided that the request for advance credit is made at the time of application. In no case will credit be granted for courses, which have been credited to another degree or diploma.
2. Part-time students are normally required to attend classes at the Queen's campus for at least one academic term (usually Summer). [Part-time students may register in no more than one half course in each of the Fall and Winter Terms. No student may register in more than two half courses in the Summer Term.
3. The total number of half courses taken by a student from outside the offerings of the Queen's M.Ed. WISE program may not normally exceed two.
4. All students are required to complete the degree requirements within five years of initial registration. The minimum period of completion of the courses necessary for graduation is 24 – 28 months (dependent upon choice of a Master's thesis or Master's project.
5. Additional regulations are published in Graduate Studies in Education: A Handbook.

Doctor of Philosophy (Ph.D.)

The program of study leading to the Ph.D. in Education is designed to educate researchers and professionals to address critical educational issues within and beyond the traditional formal school systems; to educate these researchers and professionals

from an integrated and interdisciplinary perspective through participation in on-going research programs; and to provide these researchers and professionals with the scholarly, methodological, and critical knowledge and skills to conduct original research in education.

Admission requirements

Admission to the Doctor of Philosophy in Education program is based upon completion of a Master's degree in Education or equivalent advanced-level credential with first class standing (A- or 80% or higher) at a recognized university. Professional experience in education or a related field is an asset.

Applicants are required to submit a brief research proposal (one to two pages maximum), and to contact one or two potential academic supervisors to obtain confirmation that he/she is willing to supervise their work if they apply for admission and receive an offer of admission.

Applicants whose native languages do not include English must obtain a passing score in one of the accepted tests of English language proficiency. Information can be found can be found in the General Regulations of the School of Graduate Studies here: International Students.

Promotion from the M.Ed. program in the Faculty of Education at Queen's University to the Ph.D. in Education program may be considered under exceptional circumstances. If you are interested in this option, you are encouraged to contact the Faculty's Associate Dean of Graduate Studies and Research. Additional information about this option can be found in the General Regulations of the School of Graduate Studies here: Academic Qualifications for Admission.

Fields of Study

The program has six fields: Curriculum Theorizing; Educational Studies; Learning and Cognition; Literacy Education; Measurement, Assessment, Policy, Leadership, Evaluation (MAPLE); and Special Education. The description of each field is as follows:

Curriculum Theorizing: Curriculum theorizing is an inquiry into the social, contextual, and historical facets of teaching and learning. This field extends beyond teaching disciplines and formalized curriculum mandates to explore the conditions that influence the practices of teaching and the emergence of learning. Curriculum theorizing scholars are engaged in curriculum research across the lifespan and across a

variety of diverse teaching and learning contexts, whether school-based or non-school-based including community settings and non-governmental organizations.

Educational Studies: This field affords doctoral students the opportunity to work with faculty who are experts in subject disciplines (e.g., Mathematics, Music or English education), or educational foundations (e.g., History, Philosophy or Sociology of Education), teacher education, and equity, diversity, and inclusion in education. Many faculty in Educational Studies take up interdisciplinary theory and research methodologies, and collaborate with faculty members in other disciplines at Queen's.

Literacy Education: This field addresses learners' reading and writing, both in first and subsequent languages. It has components in educational psychology, curriculum, and language assessment. Research foci include cognitive processes in reading, reading development, and writing.

Learning and Cognition: This field concerns educational psychology. Current research foci of the researchers involved include learning and development, motivation, social cognition, individual differences in ability, health-related issues, and cognitive processes in learning.

Measurement, Assessment, Policy, Leadership, Evaluation (MAPLE): There is a critical need for educational policy and decision making to be evidence informed. MAPLE represents faculty members who focus on applied inquiry and research related to student, professional and organizational learning and capacity building. More specifically, we are concerned with the measurement of educational outcomes; student growth, assessment, and achievement; policy studies and policy-making; leadership and governance, knowledge translation and mobilization; collaborative inquiry; and, program evaluation for development, improvement, accountability and decision making. Our work explores the meaning of individual, group, classroom, school, and system level data as these are interpreted within political, organizational and cultural contexts in Canada and internationally.

Special Education: This field concerns the application of psychological principles to the education of learners with exceptional needs in inclusive settings. Current research foci of the researchers involved include learning disabilities/dyslexia, mathematical disabilities/dyscalculia, and creating appropriate contexts for learners with special education needs.

Program of Study

This program is fundamentally a full-time program; therefore, registered students are expected to pay full-time fees for the duration of their program (see Requirements for Degree Programs). An academic year consists of three terms, which are fall, winter, and spring/summer. All doctoral students registering initially as a full-time student, must pay full-time fees at least for the first six terms, whatever their registration status. After that time the Faculty and the School of Graduate Studies will consider applications for a transfer from full-time to part-time status for reasons such as (1) the student has an opportunity for full-time professional employment or (2) there has been a change in the student's personal circumstances that prevent his/her studies from being pursued on a full-time basis (see Transfers from Full-Time to Part-Time Status).

All students will be required to meet regularly with their supervisor, and to maintain appropriate levels of communication in order to maintain sufficient academic progress.

The minimum time to complete the Ph.D. in Education program is nine academic terms. Students normally take courses and complete their comprehensive examinations within the first two years of initial registration. It is expected that full-time students will complete all degree requirements within four years.

Students will follow a program with the following components:

- **Coursework:** Students must complete five graduate courses, which includes EDUC-900*. The four other required courses vary by field. Courses are to be selected in consultation with the student's supervisor and with the approval of the Faculty's Associate Dean of Graduate Studies and Research. Students are encouraged to take one graduate course in another department, and may be required by their supervisory committee to take further courses beyond the five normally required.
- **Personal Program Plan:** In conjunction with their supervisory committee, students will compile a personal program plan of appropriate research and development goals and these will be tracked through the Annual Ph.D. Progress Report Form.
- **Comprehensive Examination:** The comprehensive examination will comprise a set of two tasks. It is expected that these tasks will be completed within the first two years of enrollment. The first task will be negotiated among the student, the supervisory committee, and the Associate Dean of Graduate Studies. It will take the form of one of the following: (a) the writing of a literature review on one or more specified topics; (b) the novel analyses of existing data or consideration of methodological issues; or (c) a grant proposal on one or more specified topics. For the second task each student will submit a dissertation proposal. Following

submission of this proposal, an oral candidacy exam will be held. Both the written proposal and the student's competency at the oral candidacy exam will be evaluated for this task. All parts of the examination will be marked by the supervisory committee.

- **Dissertation:** The dissertation research must be original and contribute to knowledge in the field. The defense of the dissertation will be an oral examination conducted according to the General Regulations of the School of Graduate Studies (see Thesis).

Graduate Diploma in Professional Inquiry (GDPI)

The Graduate Diploma in Professional Inquiry (GDPI) addresses the inquiry skills fundamental to quality professional thinking and action. Specifically, the GDPI curriculum is designed to improve professional problem solving and decision-making processes at the individual, team, program, classroom and organizational levels. Currently in Education, as in other professions, there is an emphasis on evidence-informed decision making. Inquiry practices are the processes used to guide such an approach.

Admission Requirements

Admission requirements for students entering the diploma program are consistent with those set by the School of Graduate Studies and will include:

- A baccalaureate degree from a recognized university
- Graduation with a B- graduating average or higher (70% graduating average or a ranking in the top third of the graduating class where number grades are not available)
- Under exceptional circumstances, consideration will be given to highly motivated individuals with relevant field experience who do not meet the B- requirement
- A statement of interest in the program will be required in order to ensure alignment of the applicant's academic background, work experience, and career aspirations with the objectives of the program.
- Applicants whose native languages do not include English must obtain a passing score in one of the accepted tests of English language proficiency. Information can be found can be found in the General Regulations of the School of Graduate Studies here: International Students.

Professional Master of Education Degree (PME)

The Professional Master of Education Degree (PME) is a part-time, course-based graduate program and is part of the Faculty of Education's laddered-credential online program. This degree is anchored in and extends from the widespread need for professionals to conduct quality systematic inquiry for evidence-informed decision-making. Students will be required to draw from their professional experience to engage with the research literature in their area of concentration.

Students may apply for direct entry into the PME or after completion of the Graduate Diploma in Professional Inquiry. Students who successfully complete this five-course diploma will be eligible to receive credit in the PME and will advance directly to the other requirements of the PME, notably to enrol in a PME concentration, choosing from one of five: Aboriginal Education, Assessment and Evaluation, Classroom Specialist, Education Abroad, and Literacy Education. Each five-course concentration focuses on developing expertise and leadership through field-based, professional inquiry aimed at improving teaching and learning.

Admission Requirements: Direct Entry into the PME

Admission requirements for direct entry will include the following:

- A baccalaureate degree from a recognized university
- Graduation with a B- graduating average or higher (70% graduating average or a ranking in the top third of the graduating class where number grades are not available)
    - Under exceptional circumstances, consideration will be given to highly motivated individuals with relevant field experience who do not meet the B- requirement
- A statement of interest in the program will be required in order to ensure alignment of the applicant's academic background, work experience, and career aspirations with the objectives of the program.
- Applicants whose native languages do not include English must obtain a passing score in one of the accepted tests of English language proficiency. Information can be found can be found in the General Regulations of the School of Graduate Studies here: International Students.

Admission Requirements: From the GDPI

- Admission requirements for students who have completed the GDPI at Queen's University are:

- Successful completion of the GDPI at Queen's University with a minimum of a B- graduating average or higher.

Areas of Concentration

(Required Course for all concentrations)

Organizational Leadership: This course provides an overview of theories of leadership and an evolution of the practices of leadership within organizations in general and educational institutions in particular. Participants will examine the social and cultural construction of leadership, will gain an understanding of the range of roles and responsibilities that a leader has within an organization; will apply effectively selected leadership skills and processes; and will develop conceptual frameworks to understand behaviours within the organization.

Students will choose from one of the following concentrations:

Aboriginal Education: The Aboriginal Education concentration will focus on (a) Ways of Knowing: Aboriginal Knowledge in the Classroom (b) Policy and Models in Canadian Aboriginal Education, and (c) Aboriginal Languages and Language Teaching. As a set these themes examine approaches to education, leadership, and knowledge from the perspective of culture-based education; the policies that have and continue to shape Aboriginal education in Canada; and, the diversity and current status of the Aboriginal Languages of the Americas. Understanding how a cultural lens contributes to an individual's 'coming to know' is a relevant for teachers and leaders working in every school system and multi-cultural organization. In support of their learning, Ways of Knowing will be offered as an elective for students enrolled in other concentrations.

Assessment and Evaluation: The practices of assessment and evaluation lead to judgments about performance that ultimately inform decision-making. In assessment, these judgments are typically about learning and achievement; in evaluation they focus on program merit, worth, significance and value. As a set, the themes structuring this concentration target three different contexts in which data must be collected, analyzed and acted upon. The focus across themes is how to optimize the accuracy, adequacy, and utility of these judgements and subsequent decisions. This concentration will focus on (a) Planning and Implementing Effective Classroom Assessment, (b) Using Classroom and Large-Scale Assessment Data, and (c) Conducting Quality Program Evaluations. Given the relevance of assessment and evaluation across school and

organizational contexts, all of these themes will be offered as electives for students enrolled in other concentrations.

Classroom Specialist: Classroom specialists focus their attention on the decisions that foster quality teaching and learning processes. They assume that their own decisions about how, when, and where to learn, in large part, shape the meaning students take from planned educational experiences. This concentration will focus on (a) Innovative Curriculum Planning, (b) The Connected Classroom, and (c) Critical and Creative Thinking. As a set, these themes invite classroom teachers to reflect on their own practices and be proactive in continuously improving the frameworks, contexts and outcomes for learning. Given that each theme is relevant to teachers of all subjects and grade levels, all of these themes will be offered as electives for students enrolled in other concentrations.

Literacy Education: Literacy in its broadest sense is the foundation for learning. Literacy allows us to acquire and exchange knowledge and to make sense of and communicate our experiences and is thus at the heart of formal schooling. This concentration will examine three important dimensions of literacy (a) Theoretical and Historical Foundations, (b) Component Skills, and (c) Effective Intervention. As a set, these themes invite classroom teachers to examine perspectives on how learners become literate, the complex mental functioning required for literacy and how teachers can target and support the development of these functions. Because literacy underpins achievement across the curriculum and needs to be reinforced, at least informally, by all teachers, Theoretical and Historical Foundations has been designed to also be an elective in support of classroom teachers and instructional leaders.

Education Abroad: Education Abroad will examine three ways that individuals explore both place and space to build an effective and successful teaching career: (a) Culture, Curriculum and Pedagogy, (b) Approaches to Professional Learning, and (c) Professional Community Membership. As a set, these themes invite current or prospective overseas teachers to understand and participate in the spectrum of learning opportunities available to them from their unique standpoint. While Education Abroad implies the relocation of the teachers, more and more teachers in domestic settings are encountering students who themselves have been relocated. The study of Culture, Curriculum and Pedagogy has been designed as an appropriate elective for teachers interested in examining how their current orientations to teaching and learning may or may not be inviting to learners from diverse backgrounds.

Applicants must apply for admission to the PME within five years after completing the GDPI although the Associate Dean of Graduate Studies and Research may waive this requirement in exceptional circumstances.

ELECTRICAL AND COMPUTER ENGINEERING

Head
Greenspan, M.

Acting Head
Yousefi, S.

Chair of Graduate Studies
Chan, W.Y.G.

Professor
Blostein, S.D., Bakhshai, A., Cartledge, J.C., Chan, W.Y.G., Frank, B., Gazor, S., Greenspan, M., Ibnkahla, M., Jain, P., Kim, I.-M., Korenberg, M.J., Liu, Y.-F., Morin, E.L., Rudie, K., Saavedra, C.

Associate Professor
Afsahi, A., Dean, T.R., Freundorfer, A.P., Hashtrudi-Zaad, K., Manijikian, N., Yam, S.H. Yousefi, S., Zou, Y.

Professor Emeritus
Eastham, A.R., Sen, P.C.

Cross-Appointed
Alajaji, F., Amari, S., Antar, Y.M.M., Cordy, J., Fichtinger, G., Hassanein, H.S., Li, Q., Linder, T., Marshall, J., Mousavi, P., Noureldin, A., Zulkernine, M.

Departmental Facilities

The Department of Electrical and Computer Engineering is housed in Walter Light Hall which provides over 5,400 square meters of modern research, teaching and classroom facilities. The building is linked to Goodwin Hall which houses the School of Computing. Additional space for undergraduate laboratories and research is located in Beamish-Munro Hall.

Graduate research is supported by an extensive network of personal computers and workstations. In total, there are over one hundred workstations and personal computers maintained within the Department. The administration of the network is both open and

flexible to allow the sharing of data, application software, and peripherals among all groups. In addition, an ATM fiber network is available for research use and several research groups also operate stand-alone computer systems linked to specialized research equipment. The Department also provides several computing laboratories to support both graduate and undergraduate courses. Installed operating systems include Unix, Windows, and Windows NT and a wide range of application software is available on both the teaching and research networks. Access to University wide computing resources, such as the Library systems and the Internet, is provided through high speed network switches.

Facilities in the Department include laboratories, with extensive modern equipment and instrumentation, dedicated to research in digital communications, cellular and satellite communications, wireless network and modems, computer communications, computer architecture and parallel processing, photonic packet switching network, information networks technology and network performance testing and monitoring, image processing, communication signal processing, array signal processing, video image compression, fiber optics, microwave integrated circuits, microwave communications, wireless communications, power electronics, electric drive systems, biomedical engineering, robotics and control systems.

A large number of graduate students are associated with projects being carried out under several federal and provincial centres of excellence, including Communications and Information Technology Ontario (CITO), Photonic Research Ontario (PRO), the Canadian Institute for Photonic Innovations (CIPI), and the Canadian Institute for Telecommunications Research (CITR). Graduate students whose research involves VLSI design have access to the facilities of the Canadian Microelectronics Corporation (CMC) which is located on the Queen's University campus.

Financial Assistance

Graduate students are frequently supported by one or more of external scholarships (such as Ontario Graduate Scholarships and Natural Sciences and Engineering Research Council Postgraduate Scholarships), University awards, research assistantships available from individual members of staff, and teaching assistantships. Teaching assistantships involve approximately 84 hours of work during the academic year and are offered, based upon Departmental needs, to full-time students in the first two years of the M.A.Sc. program and the first four years of the Ph.D. program. Student income typically ranges from $18,000 to $28,000 per annum, depending primarily upon whether or not an external scholarship is held. For further information, please contact the Coordinator of Graduate Studies in the department.

Areas of Research

The research activities of the Department fall into five broad areas:

Communications – Coordinator: S. Blostein
For detailed description
see http://www.ece.queensu.ca/Research/Groups/Communications/index.html

Computer and Software Engineering – Coordinator: N. Manjikian
For detailed description see http://www.ece.queensu.ca/Research/Groups/Computer-And-Software-Engineering/index.html

Microelectronics, Electromagnetics and Photonics – Coordinator: J.C. Cartledge
For detailed description see http://www.ece.queensu.ca/Research/Groups/Microwave-And-Photonics/index.html

Biomedical and Intelligent Systems – Coordinator: M. Korenberg
For detailed description see http://www.ece.queensu.ca/Research/Groups/Biomedical-And-Intelligent-Systems/index.html

Power Electronics – Coordinator: P. Jain
For detailed description see http://www.ece.queensu.ca/Research/Groups/Power-Electronics/index.html

Programs of Study

Applicants are accepted under the general regulations of the School of Graduate Studies.

Master's Degrees

Master of Applied Science (M.A.Sc.)

The minimum requirements for the M.A.Sc. are a research thesis, 4 term-length graduate courses or their equivalent, and the seminar course ELEC-891. One senior (400 series) undergraduate course is acceptable as equivalent to a graduate course provided that:

a. the course is approved by the student's supervisor, and

b. the student has not received credit for a similar course in their Bachelor's program.

The program of study must be approved by the Department.

Master of Engineering (M.Eng.) (Non-Thesis Option)

The requirements for this M.Eng. program are 8 term length courses and the seminar course ELEC-891. At least 4 term length courses must be taken from the Department in which the student is registered and are to be considered primary courses. A maximum of 2 term length 400 series courses may be taken provided that:

a. the courses are approved by the student's supervisor or graduate coordinator and
b. the student has not received credit for similar courses in their Bachelor's program.

All the course selections must be approved by the Department.

These courses must be selected as follows:

1. Four term-length graduate courses must be courses offered in the Department.
2. Two of the courses in (1) may be replaced by ELEC-898-M.Eng. Project.
3. Normally, the remaining courses may be chosen from courses listed by the Department, or from courses offered by another department in Queen's University, or from Royal Military College.
4. The student must select at least one course that contains a project if not selecting the project course ELEC-898. A list of courses containing a project is maintained by the department.

Master of Engineering (M.Eng.) with Industrial Internship field

The M.Eng. with Industrial Internship field in Electrical and Computer Engineering requires students to take six term-length lecture-based courses, up to two of which can be fourth-year undergraduate courses. In addition, internship students take two term-length internship project courses (ELEC-895* and ELEC-896*), for a total of eight courses. Students must also take the non-credit seminar course ELEC-891.

Further, the courses must be selected as follows:

1. ELEC-895* and ELEC-896*;

2. At least two term-length graduate courses must be courses offered in the Department;
3. Normally, the remaining lecture-based courses may be chosen from courses listed by the Department, or from courses offered by another department in Queen's University, or from the Royal Military College.

If a student decides not to take ELEC-896, then they must take a total of seven term length lecture-based courses. This situation could arise for example if the duration of the internship job was only 4 months.

Doctor of Philosophy

During the first term, the Ph.D. candidate and supervisor establish an internal thesis committee consisting of supervisor, internal examiner, and department representative. At this time, an area of research is chosen. The requirements to be fulfilled include a minimum of 4 term-length graduate courses beyond the Master's degree, a two-part comprehensive examination, the seminar course ELEC-891, satisfactory research progress and a thesis. One of the courses must be taken from outside the Department and may be at the fourth-year undergraduate level. One of the graduate courses must be taken inside the Department. The program of study must be approved by the Department.

All Ph.D. candidates will take a comprehensive examination administered in two parts by the candidate's thesis committee. Part I deals with the candidate's background in his/her chosen area of research. Part II consists of the candidate's thesis proposal. An internal-external examiner (within Queen's University, outside ECE Department) is added to the thesis committee for Part II. Part I is normally held shortly after course work completion. Part II is normally held within seven months of successful completion of Part I. After the successful completion of Part II, thesis research progress is reported by the candidate and reviewed by the thesis committee every six months. During the Ph.D. program, it is required that students present at least one seminar to other graduate students and faculty.

Materials Science and Technology

The Department cooperates with the Departments of Chemical Engineering, Chemistry, Materials and Metallurgical Engineering, Mechanical Engineering and Physics in offering courses and research projects to students wishing to concentrate in materials science and technology. Students are registered for M.Sc. and Ph.D. degrees in one of the six departments and are encouraged to take relevant courses from the others.

ENGLISH LANGUAGE AND LITERATURE

Head
King, S.

Coordinator of Graduate Studies
Wallace, M.

Professor
Berg, M., Bongie, C., Fachinger, P., Hanson, E., Jones, M.C., King, S., McIntire, G., Morrison, R., Murray, L., Pierce, J., Rae, P.M., Schlick, Y., Straznicky, M., Willmott, G.

Associate Professor
Fanning, C., McKegney, S., Pappano, M., Ritchie, L., Ruffo, A., Straker, S., Varadharajan, A., Wallace, M.

Assistant Professor
Cameron, S.B., Dujardin, G.,Moriah, K.

Professor Emeritus
Carpenter, M.W., Clark, G.R., Harland, C., Lobb, E., Lock, F.P., Logan, G.M., Monkman, L.G., Söderlind, S.,Ware, T.

Cross-Appointed Faculty
Rouget, F., Tolmie, J., Walker, C.

Adjunct Associate Professor
Wehlau, R.

Departmental Facilities

The Department of English is located in Watson Hall, with the Departments of Classics, History, and Philosophy. Watson Hall houses the Department's secretarial and faculty offices, the graduate seminar room, and shared offices for graduate students.

Financial Assistance

The Department of English offers financial support to M.A. and Ph.D. students in the form of Queen's Graduate Awards and teaching assistantships. Funding for Ph.D. students is guaranteed for four years. Ph.D. students are also eligible to apply for a limited number of teaching fellowships in the fourth year of the program.

Fields of Research

The Department offers graduate courses and thesis supervision in the major areas of literary research in English, including Medieval, Renaissance, Restoration and Eighteenth-Century, Romantic, Victorian, Modern and Contemporary British, all periods of Canadian and American literatures, Post-colonial Studies, and Literary Theory. The Department does not offer graduate courses in linguistics, creative writing, or journalism.

The Queen's University Library collections are comprised of over 2.2 million physical items and over 500,000 electronic resources, including 440,000 electronic books, 60,000 electronic serials, and 625 research databases. In terms of support for researchers in the fields of English literature Queen's has nearly complete runs of numerous Victorian periodicals, as well as access to periodical and monographic resources in databases such as the 17thand 18th Century UK Newspapers: The Burney Collection, Eighteenth Century Collections Online I & II,19th Century UK Periodicals, and Early English Books Online and Literature Online. You will find many subject and genre specific databases including Literature Online, Oxford Scholarship Online, Past Masters, Early Canadiana Online, Iter: Gateway to the Middle Ages, PEP-Psychoanalytic Electronic Publishing and Underground and Independent Comics, Comix, and Graphic Novels. The library holdings are particularly strong in Renaissance and Nineteenth-century English literature and meet the needs of graduate students working in Medieval, Eighteenth-century, and Modern literatures.

Special Collections, which are housed in Douglas Library, include an outstanding collection of Dickens, as well as the personal library of Robertson Davies. The Canadiana section, based upon the Edith and Lorne Pierce collection, is one of the most impressive in the country, and the Commonwealth section has grown rapidly in recent years. The Library resources are further augmented by microfilms of books printed in the British Isles and abroad before 1700 (from lists in the Short Title Catalogue and the Wing Supplement), and a 30-volume microfilm copy of the original Stationers' Company records. Queen's Archives has substantial holdings in Canadiana from its beginnings to the contemporary day, including the works of such writers as Carman, Purdy, and Woodcock.

Degree Programs

MASTER OF ARTS

Applicants are accepted under the general regulations of the School of Graduate Studies, providing they also satisfy the requirements of the Department. Successful candidates for admission have normally completed a B.A.(Hons) degree with at least upper second-class standing and with a cumulative average in English courses of at least 80% or A- average. Applicants will normally be favoured whose undergraduate records show a reasonably well-balanced selection of courses in English literature from the medieval period to the present day.

Students whose native language does not include English will be required to obtain a minimum score of 109 on the TOEFL Internet-based test (TOEFL Ibt) or 7.5 on the IELTS Academic module. For details see the department's website: Graduate Program, Applying: English Language Proficiency.

The M.A. program consists of (i) the equivalent of four session-length or eight term-length graduate courses, or (ii) the equivalent of two session-length or four term-length graduate courses plus a thesis of 60 pages (roughly 15,000 words). One of these courses may be taken outside the department. Only under exceptional circumstances will students be permitted to follow model (ii). Students are encouraged to take ENGL-800 as one of their credit courses. The M.A. program is designed to be completed within twelve months. Most students who enter the program in September will, therefore, have to register for the next summer term, beginning in May.

MASTER OF PHILOSOPHY

The Master of Philosophy (MPhil) is a 2-year program features intensive field-specific study, broad coursework, a Publishing Practicum, and guaranteed entry into the Department of English Doctoral Program at Queen's University. The degree is designed for diverse learners and will be of particular interest to undergraduate students who are already contemplating doctoral research.

MPhil students choosing to move directly into the workforce upon graduation will have attained field-specific expertise, advanced professionalization, and evidence of research and writing skills through the Publishing Practicum. MPhil students choosing to move on into doctoral studies will accelerate their dissertation work by three full terms.

The MPhil is nested within a flexible suite of Graduate Offerings in English at Queen's that includes the 1-year MA, the 2-year MPhil, and the 4-year PhD. Doctor of Philosophy

DOCTOR OF PHILOSOPHY

Applicants are accepted under the general regulations of the School of Graduate Studies, provided they also satisfy the requirements of the Department. Normally a first class M.A. degree or its equivalent is required for admission; applicants will be favoured whose academic records show a reasonably well balanced selection of courses in English literature from the medieval period to the present day.

Applicants are accepted under the general regulations of the School of Graduate Studies, provided they also satisfy the requirements of the Department. Normally a first class M.A. degree or its equivalent is required for admission; applicants will be favoured whose academic records show a reasonably well balanced selection of courses in English literature from the medieval period to the present day.

Students whose native language does not include English will be required to obtain a minimum score of 109 on the TOEFL Internet-based test (TOEFL Ibt) or 7.5 on the IELTS Academic module. For details see the department's website: Graduate Program, Applying: English Language Proficiency.

Students may not register in the Ph.D. program if they have failed to complete all requirements for the M.A. degree. This rule may be waived only in exceptional circumstances with the approval of the Graduate Studies Committee. A student so admitted will not be allowed to register in the second year of the program until completion of the requirements for entry to the Ph.D.

Candidates for the Ph.D. degree must demonstrate either basic reading knowledge of two languages or more advanced knowledge of one language other than English. This requirement is a minimum, and additional language training specific to a student's disciplinary field of study may be required by the Graduate Coordinator as advised by the relevant field specialists among graduate faculty. The language requirement may be fulfilled in the following ways:by having completed a basic or more advanced (as appropriate to fulfill the above requirements) full-year university-level language course prior to entry to the Ph.D. program; by passing a written translation test, or by completing, with the approval of the Graduate Coordinator, a basic or more advanced (as appropriate to fulfill the above requirements) full-year language course at Queen's or another university while registered in the program. With approval of the Graduate

Coordinator, a Queen's graduate-level language half-course (3.0 credit units), or equivalent at another institution, may also be considered to fulfill one language requirement. This credit cannot be counted among required course credits for the doctoral degree. The languages should be appropriate to the student's area of specialization, and both the languages and courses must be approved by the graduate coordinator.

Candidates for the Ph.D. degree must pass the equivalent of six graduate half-courses selected with the approval of the department (and in addition must attend ENGL-900*). Apart from completion of ENGL-900* in the third year of the program, this is normally the work of the Fall and Winter terms of the first year.

Candidates must pass an Historical Field Examination and make a Special Topic Presentation to the Department. These tasks are normally undertaken in the second year of the doctoral program:

i. **The Field Examination:** Two written papers, the first a supervised exam of approximately four hours duration; the second, a take-home exam. This examination is to be taken in the Fall term of the second year of registration, with Paper II generally assigned two days after Paper I. It is designed to test the candidate's knowledge of the texts, authors, issues and methodologies pertaining to one of the generally recognized historical periods or fields of study of literature in English. Reading guides are supplied by the Department.
ii. **The Special Topic Presentation:** This presentation will be made to the Department in May of the second year of registration and will be evaluated by two faculty advisors. This presentation will be based on a reading list devised by the candidate to address a large issue or set of issues relevant to his or her dissertation topic. The candidate will submit the reading list as an annotated bibliography to the advisors.

The degree program is completed by the preparation and presentation for defense of the doctoral thesis. In order to complete the dissertation, students will find it necessary to maintain registration for at least three years.

ENVIRONMENTAL STUDIES

Director
Hovorka, A.J.[1]
Danby. R (Acting Director, July – December 2018)

Graduate Coordinator
Smith, M.

Professor
Goebel, A.[2], Hird, M., Hovorka, A.J. [1], Jamieson, H.E., Smith, M.(Mick), Winn, L.M.

Associate Professor
Brown, S., Danby, R., Whitelaw, G.S. [1]

Assistant Professor
Harrison, A., Orihel, D., Tienhaara, K. (Effective September 1, 2018)

Emeritus Professor
Hodson, P.V., Liss, S.N.

Cross-Appointed Faculty
Aronson, K.J., Castleden, H., Chen, D., Cumming, B.F., Lougheed, S.C., Mabee, W.E., Massey, T.E., McDonald, D.A., Smol, J., Taylor, Upitis, R., M.E., Viswanathan, L., Vlachopoulus, N.[2],Walker, V.K., Wallace, M., Wang, Y.S., Webster, J., Zeeb, B.A.[3], Zeman, F.S.[3]

Adjunct Faculty
Andrew, J., Bramburger, A.[5], Clarke, D., de Solla, S.[9], Hall, G., Hickey, B.C.[4] , Kirk, J.[9], Langlois, V.[10], Madison, B., Majury, A.[7], McCarthy, D.P.[6] , Moore, S., Ortiz, X.[8], Poland, J., Ridal, J.[4], Rutter, A., St. George, S.[5], Stewart, K.[11], vanLoon, GW., Varty, J., Welbourn, P.

1 - Sabbatical leave July 1, 2018-December 31, 2018
2 – Sabbatical leave January 1, 2019 – June 30, 2019
3 - Royal Military College
4 - St. Lawrence River Institute
5 - University of Minnesota
6 - University of Waterloo
7 – Public Health Ontario Labs

8 – Ontario Ministry of the Environment and Climate Change
9 – Environment Canada
10 – Institute national de la recherche scientifique INRO – Centre Eau Terre Environment
11 – Tongji University

Departmental Facilities

The School of Environmental Studies occupies a suite of office and laboratory space in Queen's Biosciences Complex. All regular faculty members have office space in the School Biosciences Complex, and graduate students are provided carrel space in one of three common offices that can accommodate 30+ students each. Proximity to faculty members permits a high degree of interaction. The space held by the School also includes two administrative offices, offices for post-doctoral fellows and Adjunct Faculty, eight laboratories and a school lounge. Ancillary space includes a cold room, two equipment bays, and storage facilities at the Queen's University Biological Station. Some faculty members also hold specialized laboratory space in their home departments.

Financial Assistance

Stipends will be provided for PhD students at a minimum of $20,000 per year for 48 months. Stipends will be provided for MES students enrolled in either the research stream or the course stream at a minimum of $14,000 per year, pro-rated to the number of semesters spent in full time study each year. Financial support is guaranteed for only 6 semesters for research students and 5 semesters for course-based students. Resources for stipends are derived from School funds, Queen's Graduate Awards, research assistanships, teaching assistantships in the School's undergraduate courses, contributions from research grants and contracts, internal scholarships and awards, and/or external scholarships and awards. Where research grants permit, or when students earn a Scholarship or Fellowship from outside the School, some students may receive a higher stipend. The funding policy for each academic year is posted on the School's website.

Students are automatically considered for School funding, QGA Awards, and Research/Teaching Assistantships when accepted each year. Students are only accepted when a potential supervisor or advisor (MES only) has agreed to work with

them. Students must take the initiative for Scholarships awarded by either Queen's University or some outside agency (e.g. NSERC, SSHRC), and the School will endeavour to keep all students informed of opportunities.

Fields in the Program

The School of Environmental Studies provides opportunities for advanced interdisciplinary graduate level studies and research in the field of environmental sustainability. The program will provide an appreciation of the breadth of environmental issues, and the ability to interact with professionals outside a single discipline. In this context, sustainability is the study of the natural world and human activities within it, seeking ways that the desirable features of these can be maintained or even enhanced locally, throughout the world, and over time. We think of sustainability in terms of a tripod of issues, environmental, economic, and social, all of which will be examined in detail individually and in their interconnectedness. Sustainability studies, therefore, are interdisciplinary and focused on many situations including resource and land management, industrial and agricultural sustainability, and development of nations.

Within the School, the different perspectives and foci are reflected in the experience of the various faculty members. Current research is related to the three elements of sustainability indicated above, including the natural sciences, health sciences, and social sciences and humanities. A variety of projects are relevant to water quality and quantity, as it relates to human and ecological health, provision of municipal and agricultural water supplies, social justice, and the detection and mitigation of water-related problems. Other projects focus on broad issues of human and ecosystem health within urban and agricultural settings in various locations around the world.

Thesis and project research will fall in these areas, but always within the wider context of sustainability, which will be upheld through interdisciplinary supervision (among departments, between Queen’s and the Royal Military College, and in collaboration with outside agencies), course work and a broad-based seminar series.

Programs of Study

Applicants are accepted under the general regulations of the School of Graduate Studies.

The programs offered conform to the regulations set out by the School of Graduate Studies in the School of Graduate Studies calendar.

Master of Environmental Studies (MES)

The programs offered conform to the Research masters pattern I (Thesis), and the Project pattern II (Course-based), the general requirements for which are indicated in the general regulations.

The Thesis-based Pattern I master's program follows the traditional sequence of graduate training with advanced courses (four half-credit courses, including ENSC-801* and ENSC-802*) and the challenge of undertaking extensive original research. This research will result in the submission of a thesis that will be subject to a formal defense and the presentation of a public seminar preferably in the School's seminar series. The written thesis, based on a student's original research, will include aspects of at least two disciplines, such as ecology and economics, or toxicology and policy. The typical time to completion would be about six semesters.

The Course-based Pattern II master's program will also ensure the development of conceptual thinking, and analytical and interpretive skills. However, this program does not demand intensive research resulting in a thesis. Instead, the candidates will complete six half-credit courses, including ENSC-801* and ENSC-802* and a library-based research project dealing with a specific interdisciplinary problem directly relevant to environmental studies. The study will result in the preparation of a major, formal paper (approximately 60 pages or 15,000 words) and the presentation of a public seminar preferably in the School's seminar series. This program could be completed in three semesters, and should be completed in five.

Course Requirements

All MES students will be required to complete two core courses offered by the School, ENSC-801* and ENSC-802* and participate in the Annual Research Day.

Students in the thesis-based option will take another two half courses, for a total of four plus a thesis.

Students in the course-based option will take a total of six half courses including the two core courses, four other graduate electives and a major paper.

All students may include a maximum of one 400- or 500-level undergraduate course as an elective with permission.

Elective graduate courses may be selected from those offered by a variety of departments. Permission of the department and instructor are required.

Students must choose their remaining required courses from those offered by the School of Environmental Studies and relevant departments (for a listing of possible courses, see the Environmental Studies web site, Graduate Courses).

A primary focus is to expose students with a science background to social science courses such as environmental economics, environmental geography, philosophy, and sociology, and vice versa for students with a social science background. The selection of appropriate courses will be guided by the supervisory faculty, and by the course instructor, and the course selected must have a clear connection to sustainability.

Doctor of Philosophy (Ph.D.)

The Ph.D. program in Environmental Studies provides graduate training in environmental studies, emphasizing interdisciplinarity and focusing on the concept of sustainability and sustainable practices. The theme of sustainability emphasizes the long-term nature and impacts of environmental change, the connections between today's decisions and tomorrow's welfare, and the strong dependence of human well-being on environmental quality. The program responds to widespread perceptions and concerns about society's future in a world of finite resources, and there is a growing demand for this program as demonstrated through the increasing number of inquiries from students about Ph.D. opportunities in our School.

Our vision is that Queen's University will develop an outstanding Ph.D. program in environmental sustainability that is integrated and coordinated across Queen's faculties to meet the needs of students and society. This program will facilitate interdisciplinarity, and will meet the challenge of establishing ways that Queen's Faculty members can work across disciplinary and institutional boundaries to develop collaborative and integrated programs of teaching and research. This vision is consistent with and directly addresses four of six stated objectives (objectives 3-6) of the Queen's University Strategic Research Plan (2012-2017).[1]

The objectives will be achieved by a combination of courses, independent research, seminars, readings, a comprehensive examination and a thesis.

Courses

The course requirements are: ENSC-801 Methodological and Conceptual Basis for Environmental Studies, and ENSC-802 Global Environmental Problems: Issues in Sustainability. Students who have already taken these courses during a SES MES program at Queen's will be exempt from these courses and will not have additional coursework requirements. In the event that similar courses have previously been taken by a student at another University, a thorough evaluation of the course outlines by the Graduate Admission Committee may also exempt a student from taking these courses. In addition, all students will be required to register for ENSC-897 Seminar in Environmental Studies, and ENSC-999 Ph.D. Thesis Research.

Independent Research

Ph.D. candidates will come from a variety of disciplines including biology, sociology, geography, geology, chemistry, engineering, planning, philosophy, environmental studies and others. Students will study a diverse range of topics all fitting under the broad umbrella of Sustainability. Topics of research will be similar to those of our Masters students in the MES program but will be of much greater depth, innovation and originality (e.g. environment and health, urban sustainability, tourism, northern development, environmental justice, aboriginal studies, agriculture). The research component will require students to demonstrate intellectual independence, as their topics will involve participation with diverse communities (for example communities in Nunavut, rural Canada as well as a variety of communities in countries outside of Canada). Students will be required to understand local and regional context to ensure their work is relevant and of use to decision-makers. In many cases, student research, both course based and their dissertation work will require ethics clearance providing first-hand experience with ethical behaviour and the use of appropriate guidelines and procedures for responsible research. As indicated earlier the Ph.D. program will address several identified research priorities in the University's Strategic Research Plan, including environmental sustainability and Canada's North.

Students will be required to produce original research, advanced scholarship, or other creative products that can satisfy peer review and publication in both academic and popular media. Traditional journals such as Environmental Monitoring and Assessment, and Arctic are accepting environmental studies research and new journals have emerged to service the needs of environmental studies researchers such as *Local Environment, and Society and Environment*. Less traditional work will include art, websites, blogs, video and other social media which examine the social aspects sustainability.

Readings

Through frequent interactions with primary supervisors and supervisory committees, students will become familiar with existing literature, publications, and professional networks related to their selected area of interest. They will acquire an understanding of both the potential advantages and difficulties in applying different research methods and models from the humanities, the social, health and the natural sciences, to issues of sustainability. A key intellectual aim is to foster students' abilities to speak about sustainability using an interdisciplinary approach and also to foster a student's ability to speak to an interdisciplinary audience. To this end, the program also emphasizes the importance of transferable skills such as critical thinking and communication skills including written and oral presentation, and the use of appropriate computer software and information technology.

Comprehensive Examination

Ph.D. students will be required to complete a comprehensive examination within 18 months of initial registration. The purpose of the comprehensive exam is to confirm the eligibility of the candidate to continue their graduate studies in the area of sustainability by demonstrating depth and breadth of knowledge outside of their specific research area. Preparation for the comprehensive examination will encourage students to diversify and explore sustainability.

Seminars

The SES has a bi-monthly seminar series covering a diverse range of environmental issues, with speakers from the humanities, social sciences, health sciences, and natural sciences. Ph.D. students will be required to attend these seminars and present in this series once during their program, ideally towards the end of their PhD in preparation for their Ph.D. oral examination (see course work and ENSC-897). This presentation is in addition to the annual presentations made by students during the School's annual Research Day.

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1 - Objectives 3-6 of the Queen's University Strategic Research Plan (2012-2017): Objective 3: Promote and enhance opportunities for collaboration and interdisciplinary initiatives between faculty across the university and with other universities and institutions. Objective 4: Promote and enhance research partnerships that expand on our research strengths, increase support for the research, and enhance the delivery of research to stakeholders and partners locally, regionally, nationally and globally. Objective 5: Advance diversity and inclusivity through research that leads to increased understanding of cultures and communities within Canada and abroad, and

research that enables connections to people and the quality of their lives. Objective 6: Encourage and support the translation and transfer of research outcomes, new knowledge and innovation for the betterment of society.

FRENCH STUDIES

Head
Dhavernas, C.

Coordinator of Graduate Studies
Dhavernas, C.

Professor
Lessard, G.1, Rouget, F.

Associate Professor
Bénard, J., Conacher, A., Dhavernas, C., Dufresne, M., Inkel, S.2

Professor Emeritus
Calle-Gruber, M., Gobin, P.B., Hamm, J.-J., Hayward, A., Surridge, M.E., Vernet, M.

Adjunct Professor
Wells, C.

1 - Sabbatique du 1er juillet 2015 au 31 decembre 2015
2 - En conge du 1er juillet 2015 au 31 decembre 2015

Téléphone: 613-533-2090
Télécopieur: 613-533-6522
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Études françaises, Queen's University, Kingston, Ontario, Canada K7L 3N6
Hypertoile: http://www.queensu.ca/french

Note. Les admissions pour les programmes de maîtrise et de doctorat sont temporairement suspendues.

Ressources du Département

Outre les ressources importantes de la bibliothèque Stauffer, le Département met à la disposition de ses étudiants une salle équipée d'ordinateurs, située dans Kingston Hall,

comprenant des systèmes de traitement de texte, des logiciels spécialisés, ainsi que l'accès au réseau informatique de l'université.

Aide financière

Tout-e étudiant-e accepté-e dans un programme de maîtrise ou de doctorat pourra obtenir une aide financière (poste d'assistant, subvention départementale). En outre, tout-e candidat-e ayant soumis un dossier complet avant le ler mars sera considéré-e pour une bourse de Queen's University. Il existe des bourses spéciales pour les candidats dont l'adresse permanente est au Québec (Senator Frank Carrel Fellowships). Le montant minimum de l'aide financière prévue en 2011-2012 pour un-e étudiant-e de première classe est de $8,888 par an pendant deux ans au niveau de la maîtrise et de $18,000 par an pendant quatre ans au niveau du doctorat. Pour connaître la moyenne des sommes allouées, prière de s'adresser à la direction des études de 2e et de 3e cycles.

Domaines de spécialisation

Le Département d'Études françaises de Queen's offre un enseignement de qualité au niveau de la maîtrise et du doctorat. Les domaines de recherche couverts comprennent la littérature et la linguistique de l'Ancien Régime (XVIe, XVIIe, XVIIIe) et la littérature et la linguistique modernes (XIXe, XXe, Québécois, Francophonie). Les recherches théoriques des membres du département portent sur la théorie de la littérature, la théorie post-coloniale, l'autobiographie, l'histoire littéraire, la sociologie de la littérature, la rhétorique, la réception littéraire et les théories féministes. Les principaux domaines de recherche en linguistique sont les suivants: la morpho-syntaxe, la linguistique historique, l'analyse informatisée de la langue et des textes, et l'acquisition du français comme langue seconde.

Programme d'études

L'admission à tous les programmes se fait conformément aux règlements de l'École des études de 2e et de 3e cycles (School of Graduate Studies).

Le Département se réserve le droit d'exiger des candidat-e-s à l'admission une preuve de compétence tant écrite qu'orale en langue française et, le cas échéant, de leur demander de suivre des cours supplémentaires en français.

MAÎTRISE ÈS ARTS

La scolarité se présente sous deux formes différentes: i) quatre cours et un mémoire d'environ 100 pages dactylographiées; ii) six cours et un mémoire d'environ 50 pages dactylographiées.

L'étudiant-e choisit son programme et ses cours en consultation avec la Direction des études de 2e et de 3e cycles ou avec la Direction du Département. Les diplômés de Queen's University peuvent faire une partie de la scolarité de la maîtrise dans une université de langue française, avec la permission du Doyen de l'École des études de 2e et de 3e cycles.

Les cours comportent en général une dissertation et des présentations orales. Les thèses sont rédigées en français. L'examen oral pour la soutenance de thèse se fait en français mais il se peut que quelques questions soient posées en anglais.

DOCTORAT

La scolarité du doctorat comporte six cours choisis en consultation avec la Direction des études de 2e et de 3e cycles ou la Direction du Département. Un cours peut prendre la forme de recherches dirigées dans un des domaines de spécialisation susmentionnés.

L'étudiant-e doit avoir une bonne connaissance de l'anglais; il/elle doit être capable de lire au moins une autre langue que le français et l'anglais, choisie en fonction des besoins de sa recherche. A la fin de la scolarité, l'esprit critique, la connaissance de différents domaines d'études françaises et l'aptitude à la recherche des étudiant-e-s seront évalués par un examen général qui se compose d'une épreuve écrite et d'un projet de thèse. Cependant, l'accent est mis sur l'évaluation continue des progrès de l'étudiant. Pour de plus amples renseignements à ce sujet, voir le règlement général de l'École des études de 2e et de 3e cycles et les règlements internes du Départment d'Études françaises.

Les cours comportent en général une dissertation et des présentations orales. Les thèses sont rédigées en français. L'examen oral pour la soutenance de thèse se fait en français mais il se peut que quelques questions soient posées en anglais.

GENDER STUDIES

Head
King, S.J.

Coordinator of Graduate Studies
Morgensen, S.

Professor
Helland, J., Little, M.

Associate Professor
McKittrick, K., Morgensen, S., Srivastava, S., Tolmie, J.

Assistant Professor
Robinson, D., Salah, T.

Cross-Appointed Faculty
Aziz, S., Baines, B., Burfoot, A., Davidson, J., Davies, J., Dickey Young, P., Dubinsky, K., Dumas, G.A., Fachinger, P., Goebel, A., Goldberg, E., Hamilton, R., Hanson, L., King, S.J., Kobayashi, A.L., Krull, C., Lahey, K.A., Lamb, R., Levine-Rasky, C., Lewis, M., Lord, S., MacDonald, E., McIntire, G., Mullings, B., Naaman, D., Overall, C.D., Pegley, K., Power, E., Ratcliffe, L.M., Renders, K., Rethelyi, M., Rewa, N., Rivera, M., Scott, J., Snider, L., Thompson, P., Varadharajan, A., Walker, B.

Library

The Queen's library system has excellent gender studies holdings and continues to invest in related areas such as feminist studies, queer studies, trans studies, critical race studies and Indigenous studies, allowing Queen's students and faculty access to online journals covering all facets of the discipline alongside building a substantial holding of books and monographs in the field.

Financial Assistance

Resources for stipends are derived from a combination of Queen’s Graduate Awards (QGA), teaching assistantships (TA-ships) in the department’s undergraduate courses,

contributions from research grants and contracts, internal scholarships and awards, and external scholarships and awards. Stipends are typically paid in three equal installments throughout the year.

Students must apply for scholarships awarded by Queen's University in addition awards from Social Science and Humanities Research Council (SSHRC) and the Ontario Graduate Scholarship (OGS).

Programs of Study

Master of Arts (M.A.)

The Master's program will lead to a degree of Master of Arts in Gender Studies. The M.A. in Gender Studies has been designed as a one-year program. Full time students are required to take two core courses (GNDS-801 and GNDS-802) and four elective courses in fall and winter semesters and to complete a Major Research Paper (GNDS-898) during spring and summer. The Graduate Program also supports limited admission to a two-year stream structured around a Master's thesis (GNDS-899). Students admitted to the two-year stream spend the second year researching, writing and defending the thesis, which must be 75-100 pages and must comply with the regulations of the School of Graduate Studies at Queen's University.

Part-time student options can be negotiated with the Graduate Coordinator on a case-by-case basis.

Program Vision The M.A. in Gender Studies offers a theoretically rigorous immersion in the most current modes of scholarship and activism in gender studies and cognate fields. Students examine how culture and social life are structured by relations of difference and power (such as gender, race, class, nationality, sexuality, disability, age and religion) and pursue interdisciplinary studies of critical theories, research methods, writing genres and emancipatory struggles, while grounding original research in the knowledges offered by each. Students develop and practice skills in critical thinking, research, writing and speaking while applying interdisciplinary knowledge to local and global questions and struggles.

Doctor of Philosophy (Ph.D.)

Admissions Requirements

- MA degree from a recognized university in gender studies or cognate fields (women's studies, feminist studies, sexuality studies) or in another field with evidence of a prior focus on gender.
- Minimum of B+ / 75% in the last two years of university study.
- Consideration will be given to practitioners of gender studies in the public or private sectors who hold the BAH and who demonstrate exceptional and relevant professional experience and achievement in an appropriate field.

Students admitted to the PhD who hold the MA in Gender Studies from Queen's, and who attained first class standing while taking core courses required in the PhD program, will be granted advanced standing.

Program Requirements

The program is designed to be completed within 48 months and to commence in September. The program requires five courses (15 units) which will consist of four classroom-based seminars taken during the first year and a practicum taken during fall of the second year, during which time students will initiate research for the dissertation.

The required courses are (all are 3.0 credit units):

GNDS-801 Theories in Gender Studies
GNDS-802 Methodologies in Gender Studies
GNDS-903 Applications of Gender Studies
GNDS-950 PhD Practicum (a research placement outside the university and/or a research placement that complements the candidate's research program and is presented to the Queen's community).

Students must also complete GNDS-815 Professional Development Seminar and one elective of 3.0 credit units, to meet the coursework requirements of the degree.

PhD students will create a syllabus and prepare for a research proposal defence during spring/summer of the first year and fall of the second, and have a proposal defence in winter of the second year. The proposal defence serves as the program's qualifying examination. Students who pass the defence will begin full-time research and writing of the dissertation. Students advanced to candidacy will be enrolled in the dissertation course (GNDS -999) in each term until the dissertation oral defence.

GEOENGINEERING

Faculty
Archibald, J.F., Bathurst, R.J., Brachman, R.W.I., Diederichs, M.S., Hutchinson, D.J., Jamieson, H.E., Kueper, B.H., McKinnon, S.D. (Chair in Mine Design), Moore, I.D. (Canada Research Chair in Infrastructure Engineering), Novakowski, K.S., Remenda, V.H., Rowe, R.K. (Vice-Principal, Research), Siemens G.A., Take, W. A.

Overview of the Collaborative Program

GeoEngineering is a Collaborative Program linking Graduate and research programs in the Departments of Civil Engineering, Geological Sciences and Geological Engineering and Mining Engineering at Queen's with Civil Engineering at the Royal Military College of Canada. This program is associated with the GeoEngineering Centre at Queen's - RMC. Students enter this program having first enrolled in one of the four constituent programs. The collaborative program is designed to provide shared learning experiences with interdisciplinary content, and is available to doctoral students as well as both research and coursework masters students associated with those four constituent programs. On graduation, students choosing to participate in this program are identified as having specialized training in GeoEngineering.

GeoEngineers are involved with the engineering of earth and rock structures such as those associated with foundations, slopes, deep excavations, tunnels, solid waste landfills, and contaminated ground. The effective solution of many of these problems requires a multidisciplinary approach, featuring the application of engineering mechanics and applied mathematics, materials science, geology, hydrogeology and geochemistry. GeoEngineers are normally drawn from traditional fields such as Civil, Mining and Geological Engineering, though they may also come from other disciplines such as Applied Mathematics, Chemistry, Geology and Physics.

Areas of GeoEngineering Research Strength

a. **Hydrogeology:** The hydrogeology group focuses on the behaviour and remediation of contaminants in groundwater, with specific applications in fractured rock, fractured clay, and unconsolidated porous media. Investigations of regional groundwater flow and the sustainable use of groundwater resources are also conducted. Extensive use is made of compositional numerical simulation, laboratory

experimentation, and field characterization methods (Bernard Kueper, Kent Novakowski, Vicki Remenda)

b. **Geotechnical Engineering:** Geotechnical Engineering involves the application of soil mechanics, rock mechanics and engineering geology to solve soil and rock engineering problems such as design of foundations, slopes, excavations, dams, tunnels and other Civil, Mining and Environmental engineering works involving the mechanical response of the ground and the water within it. Research work being undertaken includes studies on shallow and deep foundations, tunnels and deep excavations, pipes, culverts and other buried infrastructure, and Geotechnical Earthquake Engineering (Richard Bathurst, Richard Brachman, Mark Diederichs, Jean Hutchinson, Steve McKinnon, Ian Moore, Gerald Raymond, Kerry Rowe, Andy Take)

c. **Geoenvironmental Engineering:** Geoenvironmental Engineering is the multidisciplinary application of Geotechnical engineering, Hydrogeology and Geochemistry to solve modern-day environmental problems related to soil and water pollution. The group has expertise in solid waste landfills, subsurface NAPL contamination and remediation, geochemistry of mine tailings, and Geosynthetic barrier systems (Richard Bathurst, Richard Brachman, Jean Hutchinson, Heather Jamieson, Bernard Kueper, Kent Novakowski, Vicki Remenda, Kerry Rowe)

d. **Geomechanics:** Geomechanics involves the response of in-situ earth materials to the presence or application of deforming forces. It embraces the fundamentals of soil mechanics, rock mechanics, material science and structural geology. Geomechanics Engineering involves the application of these disciplines to the interpretation of geometry and distribution of ore bodies and hydrocarbon resources, the assessment of hazards associated with geological structure, earth stresses and deforming geomaterials. It also involves the design of surface and underground openings to account for the influence of natural and induced stresses. Research work being undertaken includes the study of issues related to rock mass strength and yield response, site investigation, the design of surface and underground works for mining and tunneling, long term stability of abandoned mine workings, the design of underground support, the numerical simulation of soil and rock response to stress and to blasting, the study of mining induced seismicity, and risk management related to worker and public exposure to hazards related to Geomechanics (James Archibald, Richard Brachman, Mark Diederichs, Jean Hutchinson, Steve McKinnon, Ian Moore, Kerry Rowe, Andy Take)

e. **Geosynthetics:** Geosynthetics are planar, polymeric materials used in contact with soil/rock and/or any other Geotechnical material in civil engineering applications. They include geotextiles, geogrids, geomembranes, Geosynthetic clay liners, geonets, geopipes, geofoams, prefabricated vertical drains and other products placed in contact with soil to separate, filter, reinforce, protect, drain or resist

drainage in a range of Geotechnical and Geoenvironmental applications. Research work being undertaken includes studies on reinforcement to enhance the stability of walls, foundations, tunnels and embankments, on the use of geomembranes and Geosynthetic clay liners to limit contaminant migration from municipal and hazardous waste landfills and as barrier systems for hydrocarbon contaminated soils, and on new and repaired pipes and manholes (James Archibald, Richard Bathurst, Richard Brachman, Ian Moore, Gerald Raymond, Kerry Rowe)

f. **Geochemistry:** Geochemistry involves understanding the chemical composition and interaction of earth materials such as natural and contaminated waters, sediments and rocks. Research in geochemistry includes studies of the long-term stability of mine waste including kimberlitic tailings, acid rock drainage and arsenic-rich gold mine tailings, subsurface NAPL contamination and migration, and groundwater tracer migration studies (Heather Jamieson, Bernard Kueper, Vicki Remenda)

Facilities

Researchers in the GeoEngineering Centre at Queen's - RMC enjoy high levels of support from NSERC, the Department of National Defense, the Canada Foundation for Innovation, the Ontario Innovation Trust, other Canadian and US Government agencies, as well as industrial funding. In addition to providing opportunities for scores of graduate student projects, this funding has permitted the development of world-class research infrastructure. Details are available on the Department websites, as well as at www.geoeng.ca.

Courses and Programs of Study

Course details are given under the constituent Departments (Civil Engineering, Geological Sciences and Geological Engineering and Mining Engineering at Queen's with Civil Engineering at the Royal Military College of Canada). All students undertake the GeoEngineering Seminar Course GEng-840. Website: http://www.geoeng.ca/Prospective.htm.

Other courses are selected from GENG-841 and 842, and a coordinated list offered by the four constituent departments: CIVL-840*, 841*, 842*, 844*, 847*, 848*, 880*, 881*, 882*, 888*, GEOL -833*, 840*, 885*, MINE- 818*, 820*, 821*, 823*, 828*, RMC-CE 531*, 535*, 539*, 588*.

GEOGRAPHY AND PLANNING

Head
Mabee, W.+

Coordinator of Graduate Studies
Scott, N.A.++

Professor
Cameron, L.J.+++, Chen, D., Donald, B.J., Godlewska, A.[1], Gordon, D.L.A[2]., Hovorka, A.[3], Kobayashi, A., Lamoureux, S.F., Mabee, W.E., Rosenberg, M.W.+, Treitz, P.

Associate Professor
Agarwal, A., Bevan, G.A., Castleden, H.+, Collins, P., Danby, R., Davidson, J.[3], Lafrenière, M., Meligrana, J.F., Mullings, B.A., Scott, N.A.++, Viswanathan, L., Whitelaw, G.S.[1]

Assistant Professor
Prouse, C., Thomson, L., Way, R.G.

Professor Emeritus
Goheen, P.G., Holmes, J., Leung, H.-L., Lovell, W.G., McCaughey, J.H., Moore, E.G., Osborne, B.S., Qadeer, MA., Riddell, J.B., Skaburskis, A., Tinline, R.R.

Cross-Appointed
Anderson, B.C.,Masuda, J., McDonald, D.A., McKittrick, K., Murakami Wood, D., Schwartz, J.

Continuing Adjunct Assistant Professor
Andrew, J.S.

Adjunct Professor
Rutherford, T.

Adjunct Associate Professor
Belanger, P., Bray, C., Nolin, C.

Adjunct Assistant Professor
Streich, P.A.

Adjunct Lecturer
Agarwal, S., Cumming, S., Gkotsis, T.

1 - On Leave July 1, 2018-December 31, 2018
2 - On Leave January 1, 2019-June 30, 2019
3- On Leave July 1, 2018-June 30, 2019

+ *Canada Research Chair*
++ *Canada Research Chair in Greenhouse Gas Dynamics and Ecosystem Management (2005-2015)*
+++ *Canada Research Chair in Historical Geographies of Nature (2003-2013)*

Programs of Study

The Department of Geography and Planning offers graduate training leading to the degrees of Master of Arts, Master of Science, Master of Urban and Regional Planning and Doctor of Philosophy.

Master of Arts and Master of Science

Admission to these programs is based upon the completion of an Honours Bachelor's degree or equivalent, with minimum high second-class standing (B+ letter grade, 3.3 GPA).

The Master's program conforms to the research pattern I, but may be constituted from one of two options: i) four term-length graduate courses plus a thesis weighted at one-half of the total program; ii) six term-length graduate courses plus a thesis weighted at one-quarter of the total program. GPHY-857* is required for all Master's students in addition to the standard course load.

Master of Urban and Regional Planning

Information on the M.Pl. program may be found in the School of Graduate Studies Calendar under Urban and Regional Planning.

Doctor of Philosophy

Admission to this program is based upon the completion of a Master's degree or its equivalent at a superior level at a recognized university.

The Ph.D. program involves:

1. **Coursework:** A minimum of three graduate term (semester) courses beyond the Master's. Courses must be selected with the concurrence of a faculty member and the Associate Head, Geography Graduate Program. Normally one of these may be taken outside the department and at least two courses must be taken within the department, one of which must be GPHY-801*.
2. **Language:** The Associate Head, Geography Graduate Program, in consultation with the student's supervisor, will require the student to gain competence in a language, other than English, if it is judged to be pertinent to a candidate' s program.
3. **Qualifying Examination:** This examination is held once the student has completed required course work. The focus of the examination will be a discussion of a research proposal and the broader philosophical, methodological and substantive issues which define the intellectual content of the area in which the student's work is located. Students enrolled in the Ph.D. program are required to have successfully completed their qualifying examination within six terms of residence for the Ph.D. degree. Students are permitted to sit the examination a second time, so long as the second examination is completed within the time limits as prescribed above.
4. **Dissertation**

Financial Assistance

Financial assistance is available in the form of teaching assistantships for undergraduate instruction. Duties include demonstrating and instruction in laboratories, tutorials, and seminars. In addition, graduate students may receive Queen's Graduate Awards as supplemental financial support. Employment may also be available on a part-time basis on various research projects. Geography and Planning graduate students are nominated annually for internal fellowships for which they may be eligible.

Fields of Research

Studies at the Master's and Doctoral level are offered in the following areas:

Human Geography

The broad emphasis in the field of Human Geography is on exploring the evolution of a multitude of human systems. The focus is on the interactions and linkages between systems that operate at different scales, ranging from local (work, place, bodies, gender, health and healthcare, urban areas) and increasing through regional and national scales (citizenship, justice, governance, postcolonialism, indigenous peoples) to global systems (globalization, development, economies, sustainability). Unifying themes include identity and place.

The broad emphasis in the area of Urban and Regional Planning is on the planning and development of cities and regions, and the relation between development and public policy concerns. Research in urban and regional planning seeks to integrate the latest knowledge related to environment and society with real-world planning challenges. Areas of focus include health and social planning, environmental services, and land use and real estate planning.

Earth System Science

The broad emphasis in the field of Earth System Science is on developing an integrative understanding of the Earth as a physical system of interrelated phenomena. The focus is on the interaction and linkages throughout the environment - the lithosphere, atmosphere, hydrosphere, cryosphere, and biosphere - and on physical, chemical, and biological processes operating at a wide range of spatial and temporal scales. Areas of faculty interest include forest systems, cold regions, energy production, and planning around resource use. Measurement, integration, and modelling of earth system elements to understand these linkages are key foci of research and graduate training activities. Field measurements and sample collection are matched with laboratory and data analysis, and modelling.

Geographic Information Science

The broad emphasis of research in GIS encompasses the theoretical, technical and applied aspects of cartography, geographic information systems, remote sensing and image processing, and modeling of human and natural systems. Specific areas of research focus relate GIS to aspects of human geography (disease modeling, mapping of human impacts on the environment, resource optimization, contemporary and historical cartography), physical geography (biophysical remote sensing, image processing, geo-visualization), and urban and regional planning (land use planning, cartography, social engagement).

Departmental Facilities

Excellent research facilities include:

Computing

Computing support in the department is provided from a variety of sources: a departmental GIS laboratory located beside the department; specialized computing equipment in departmental research laboratories; and, a broad base of personal computers housed in faculty and graduate student offices. All faculty and graduate students are provided with a university computing account and ethernet connection from their office. The account also provides students with a Queen's email address, internet access, and an authentication mechanism for access to restricted sites and services across campus.

Labs, Forums, Research Groups

Laboratory equipment, enabling a broad range of environmental analyses, is distributed throughout both general and specialized laboratory spaces as described below. Field and laboratory research is supported by a range of common equipment.

Human Geography

The Sonic Arts of Place Laboratory (SAP Lab) provides workspace, recording equipment, computer software/hardware and a listening station to support human geography field research. The SAP Lab is used by graduate and upper-level undergraduate students for research projects involving interviewing, oral geography, soundscapes, media digitization and video documentation. Resources include: Edirol and Zoom H1 portable digital audio recorders, Sony video camera, Logic Pro digital audio workstation software, Reaper digital audio workstation software, Raven Pro sound analysis software, Edirol FA66 firewire audio interface, M-Audio Q 40 headphones, Behringer B2031 monitors, iMac computer.

The Lives of Animals Research Group at Queen's University focuses on human-animal relations. We are interested in how humans think about, place and interact with animals, and how animals actively shape human lives, landscapes and development trajectories. Our work is interdisciplinary, bridging social sciences (e.g. geography, environmental studies, social theory) with natural sciences (e.g. animal welfare science, behavioural ecology, biology) to ensure holistic research results meaningful for both human and non-human animals. We collaborate with communities, scientists, practitioners, NGOs and governments. We hope to inform appropriate program and policy interventions that acknowledge, respect, and enhance the lives of animals.

The Geographies of Aging Laboratory (GAP Lab) is home for a wide range of projects emphasizing all aspects of the aging Canadian population, global aging, and research on the geographies of health and health care.

The Health, Environment, and Communities Research Lab (HEC Lab) houses a group of researchers and trainees who focus on reconciliatory, respectful, reciprocal, and responsible community-based participatory research. We are committed to equity-oriented projects that apply social, environmental, and health justice lenses, and our work comes together through intersections of culture(s), place(s), power (and resistance), and relational ethics using innovative, decolonizing research tools and methodologies. Our lab is equipped with a wide range of field equipment (audio and video recording, photovoice, and digital storytelling technologies), qualitative data management and transcription software, as well as common and individual internet-connected computer work stations.

The Citizenship, Equity, Rights, Community, Inclusion, and Social Justice group includes projects addressing a range of citizenship and social justice issues addressing the law, racism, critical disability studies, gender identity, and poverty. The lab contains facilities for research varying from qualitative methods to large-scale surveying and mapping techniques, and involves graduate students and researchers working in a variety of places across Canada.

Earth System Science

A new soil, sediment and vegetation sample processing laboratory is available for a wide range of uses. Soils analysis is supported by the standard analytical laboratory facilities including combustion furnaces and drying ovens. Soil processing is facilitated by a SPEX Certi-Prep grinder, balances of varying capacity, and pH meters. Preparation of plant material is also accomplished using the SPEX grinder. Limnological analysis is supported by GPS units, conductivity meters, water and sediment acoustic profiling equipment, ground-penetrating radar, a vibracorer, dredges and surface corers, and a Hydrosond. Boats equipped for research in lacustrine and marine environments are available.

The Environmental Variability and Extremes Laboratory (EVEX) houses instruments to support geomorphology, hydrology, sedimentology, and limnology. Instrumentation includes an automated Coulter laser scattering particle size analyzer, high-resolution magnetic system, a high capacity furnace, analytical scales, fume hoods, and walk-in refrigeration along with microscopy and image analysis. A dedicated thin section laboratory including a freeze dryer and vacuum embedding

system is available. A large number of data loggers and sensors are available, as are boats for studies in lake and marine environments.

The Cape Bounty Arctic Watershed Observatory (CBAWO) in the Canadian High Arctic is a field laboratory to undertake integrated Arctic System Science research related to land, water, vegetation, soil, and atmospheric processes. Queen's Geography and Planning researchers and students work with other institutions and northern communities to understand the impact of environmental and permafrost change. A base camp provides accommodation and laboratory facilities, and research is supported by land and water instrumentation and long term sampling locations and experiments. Watersheds and lakes are instrumented to evaluate hydrological processes and land instrumentation includes: meteorological stations, an eddy covariance gas flux tower, automated and manual soil gas chambers, a network of soil and borehole stations, and time lapse cameras. Vegetation research supported by an extensive remote sensing collection as well as a long term network of sites and an International Tundra Experiment (ITEX) site where snow and growing temperature conditions are experimentally altered.

The Facility for Biogeochemistry Research on Environmental Change and the Cryosphere (FaBRECC) emphasizes the measurement of organic and inorganic constituents in soil, water and atmospheric samples. Research is supported by a Millipore water system producing 18 Mohm, < 5 ppb TOC water and a Miele dishwasher system, Shimadzu Total Organic Carbon analyzer, an ICS 5000 liquid ion chromatograph, laminar flow hood, an Aqualog fluorometer, an Astoria Pacific Astoria2 automated colorimetric system, LECO TruSpec carbon/nitrogen analyzer, and a Shimadzu Greenhouse Gas GC system equipped with an autosampler. Field research is supported by soil and stream water sampling and monitoring equipment as well as automated chambers for measuring greenhouse gas exchange between the land and the atmosphere.
(http://www.queensu.ca/geographyandplanning/fabrecc-lafreniere)
(http://www.queensu.ca/geographyandplanning/fabrecc-scott)

The Biogeography and Landscape Ecology (BALE) Laboratory focuses on the analysis of ecological patterns and processes at multiple spatial and temporal scales. Emphasis is on the study of species and vegetation distributions and dynamics, and their implications for conservation planning and management. Specialized laboratory facilities include a multi-station dendrochronology bench for measurement and analysis of tree rings, a suite of equipment for the preparation and measurement of vegetation samples, computer workstations for spatial and statistical analysis, and an extensive

range of field equipment to support experimental and observational studies in a variety of environments.

The Renewable Energy Development and Implementation (REDI) Laboratory focuses on understanding the challenges with transition to a renewable economy. Our group has amassed geo-referenced data on Canadian renewable resources and developed specialized tools for managing these resources. Extensive databases on policy and institutional support mechanisms related to renewable energy development are also available.

Geographic Information Science

The Laboratory for Remote Sensing of Earth and Environmental Systems (LARSEES) is dedicated to remote sensing research related to estimation and characterization of biogeophysical processes and patterns over diverse landscapes. A specialized computing facility has been designed to support memory intensive remote sensing research. A suite of remote sensing, GIS, and statistical software is available to meet the demands of diverse remote sensing data types and analyses. Specialized equipment available for in situ measurements of spectra and canopy biophysical parameters include an ASD 350-2500 nm spectroradiometer, LiCor Plant Canopy analyzers, and canopy hemispherical photographic systems. Field equipment is also available to support forest and arctic biophysical measurements.

The Laboratory for Geographic Information and Spatial Analysis (LaGISA) is a facility dedicated to the understanding and modeling of the interaction between human activities and physical environments by using GIS, remote sensing, and quantitative spatial analysis. It includes a state-of-the-art computing and display facility to support memory intensive geo-computational modeling and visualization research. A wide range of GIS, remote sensing, and statistical software is available.

Urban and Regional Planning

The Planning With Indigenous Peoples (PWIP) Research Group is dedicated to conducting collaborative research about policy and planning with First Nations. Our objective is to enhance Indigenous-municipal relationships in the context of land use planning in the cities and regions encompassing First Nations' lands in Southern Ontario. We also seek out the relevance and applications for our planning and policy research to other jurisdictions.

The Ambassadors' Forum was established by the School of Urban and Regional Planning in 2003 and brings together ambassadors and high commissioners to Canada from 20 Asia-Pacific countries to meet for discussion with informed and thoughtful Canadians who speak on domestic and international issues.

The China Projects Office was established under a Memorandum of Understanding between Queen's University and the Chinese Ministry of Land and Resources in 1999. The primary function of the China Projects Office is to provide logistical support to implement the MOU between Queen's and the MLR.

The National Executive Forum on Public Property brings together organizations from all levels of government across Canada to create a public sector council where real property knowledge and best practices are exchanged. Senior officials of over 40 federal departments, provincial/territorial agencies, the largest municipal governments and development agencies, use the Forum and the information emanating from its annual symposium and fall working session. The Forum has Academic Advisors drawn from across Canada, conducts practice-based research and facilitates internships.

The Queen's Real Estate Roundtable (Q25) is a group of companies from a broad spectrum of the Canadian commercial real estate sector, working together to engage in high-quality, value-added executive development, applied research, and senior-level networking. In addition to its executive seminar series (ESCIRE), current and future activities include member-directed applied research projects, an annual retreat, senior-executive networking events, and collaborative events with other industry organizations.

GEOLOGICAL SCIENCES AND GEOLOGICAL ENGINEERING

Head
Hutchinson, D.J.

Coordinator of Graduate Studies
Jamieson, H.

Professor
Dalrymple, R.W., Diederichs, M.S., Dixon, J.M., Hutchinson, D.J, James, N.P., Jamieson, H.E., Kyser, T.K., Lee, J.K.W., Narbonne, G.M., Olivo, G.R., Peterson, R.C.

Associate Professor
Braun, A., Godin, L., Hanes, J.A., Layton-Matthews, D., Remenda. V.H.

Professor Emeritus
Carmichael, D.M., Clark, A.H., Farrar, E., Helmstaedt, H., Hodgson, C.J., Mackenzie, B.W., Mason, R., Nichol, I., Price, R.A., Roeder, P.L.

Cross-Appointed Faculty
Bevan, G., McKinnon, S., Vlachopoulos, N.

Continuing Adjunct
Harrap, R.

Adjunct (Group 1) Professor
Franklin, J.M., Martindale, W., Parsons, M., Pratt, R.G., Schulze, D.

Adjunct (Group 1) Associate Professor
Doggett, M.D., Gehling, J.G.

Adjunct (Group 1) Assistant Professor
Archibald, D.A., Bone, Y., Camacho, A., Hiatt, E.E., Kellett, D., McClenaghan, M.B., Peter, J., Pratt, A., Pufahl, P., Snyder, D.

Departmental Facilities

The department is located in stately Miller Hall and its modern Bruce Wing. There are excellent study collections, including more than 70,000 volumes and 20,000 maps housed in the university's Douglas Library. We are also proud of our superb mineralogical, petrological, sedimentological and paleontological collections.

In addition to the standard tools related to the Earth Sciences, the department is home to numerous high-end laboratory and computational facilities. Among these facilities are the following:

- A new electron microprobe and scanning electronic microscope with mineral analyser facilities for the determination of the chemical composition of micron-scale areas on mineral samples. Training courses are regularly provided for interested graduate students.
- X-ray diffraction facilities that include a new Xpert Pro Philips powder diffractometer with an X'celerator area detector and 15-sample chamber magazine. The diffractometer is equiped with an environmental chamber which allows diffraction experiments under a wide range of pressures and temperatures.
- Fluid inclusion facilities including two new Linkham cooling-heating stages and digital imaging, allowing for investigation of fluid inclusion at temperatures between 180°C and 1500°C.
- The Queen's University 40Ar/39Ar geochronology laboratory contains an 8 W Ar-ion laser and Modifications Inc. resistance furnace coupled to an MAP 216 mass spectrometer, yielding 40Ar/39Ar ages with typical precisions of ± 0.5%. The laser can be used in both spot-dating and step-heating modes to maximise the isotopic age information from the samples.
- The department is home to the Queen's Facility for Isotope Research (www.queensu.ca/geol/qfir/facilities/qfir-stable-isotope-lab), an ultra-modern and diverse geochemical laboratory capable of analysing the isotopic composition of a wide range of elements in almost any material. The equipment includes a MAT 252 Delta XP and a new MAT 253 isotope ratio mass spectrometers plus a full suite of peripheral tools such as gas chromotographs, elemental analyzers and a gas bench. There are also two complementary Inductive Coupled Plasma Spectrometer (ICPMS) systems, complete with two inniegan Elements, ICPOES, a Thermo X and a Finnegan Neptune multicollector.All can be interfaced with our 193, 213 or femtosecond laser systems for ablation to analyze trace element compositions on a scale of 10 micrometers.
- The Rose Geocomputation Laboratory in the Department of Geological Sciences and Geological Engineering provides computational resources. The lab is

equipped with 6 PC workstations with GIS, CAD, programming, and geological modeling software. Network file servers allow data and project work to be shared and seamlessly moved between work locations. Funded by a generous donation from Mike and Sue Rose, alumni of the Department, the Lab has continuing funding to remain state-of-the-art for future generations of students.

- A 20,000g centrifuge is available for experimental tectonic modelling. This facility is unique in Canada, and, to the best of our knowledge, is one of only three in the world that are used for scaled modelling of tectonic processes.
- There is a state of the art Geomechanics Computation Laboratory with research and design analysis software including comprehensive packages from RocScience, Mine Modelling, Itasca and others. This suite of analysis tools is used for engineering design analysis and can also be applied to geomechanical analysis of earth processes. There is also a new and complementary laboratory-scale multi-channel full-waveform acoustic emission system from ESG Inc., intended for use with conventional rock-testing apparatus.
- The Earth Systems Information Laboratory is the teaching computing lab for the Department of Geological Sciences and Geological Engineering. With 50+ computers, screen projection for presentations or software demonstrations, access to network file servers, and scanning and printing facilities, the Lab can handle full lab classes as needed. Geophysical, geological, GIS and CAD software are available for student use on all computers.
- Microstructural Laboratory: The microstructural laboratory consists of two high-end petrographic microscopes (Leica M420 macroscope with high-quality 6:1 Apozoom objective, and a Nikon E600 polarizing microscope up to 100x), both linked to a QIcam 12bit monochrom high resolution digital camera operated by a Compix Image processing and Analysis (IPA) software. This software can isolate mineral populations, and perform several quantitative measurement tasks on captured images. The laboratory also has a standard Leitz petrographic microscope equipped with a 5-axis Leitz Universal stage for crystallographic preferred orientation measurements.

Financial Assistance

The Department of Geological Sciences and Geological Engineering guarantees minimum stipends for its funding-eligible students. The minimum for students completing a master's two year research program is $21,000 per annum. For Ph.D. students the minimum is $23,000. Both minimum stipends are effective as long as the student is within terms of support. Actual financial support may be higher in many

cases, depending on external awards student may have received. The one-year master's students receive no financial assistance.

Fields of Graduate Study and Research

Research in the Department of Geological Sciences and Geological Engineering is offered in five fields of study.

- Field I - Economic Geology and Mineral Exploration
- Field II - Petrology and Structural Geology
- Field III - Sedimentology, Sedimentary Geochemistry and Paleobiology
- Field IV - Geophysics and Geochronology
- Field V - Applied Geoenvironmental Sciences and Geotechnique

The Department provides opportunities for a broad range of major subfields in the earth sciences, including mineralogy, petrology, structural geology, stratigraphy, sedimentology, paleontology, geochemistry, geophysics, environmental and economic geology. In geological engineering there are particular strengths covering hydrogeology, environmental geochemistry, geomechanics, hazard mitigation and earth-structure interaction.

Members of the department's staff often collaborate, giving graduate students exciting opportunities for multidisciplinary research under co-supervision.

Among the broad areas in which recent graduate research projects have been concentrated are: integrated geochronological and metallogenic studies of parts of the Canadian Shield and the Cordillera of North and South America, genesis of mineral deposits in all geological settings and their application to exploration models, tectonics of the Canadian Cordillera and the Canadian Shield, environmental studies in the Canadian arctic as well as other parts of North America, integrated sedimentological/geochemical/paleobiological studies of modern and ancient carbonate and siliciclastic depositional systems, the early evolution of animals and their ecosystems, exploration geochemistry, and theoretical to observational studies in both exploration and earthquake seismology. Geological Engineering projects have focussed on fundamental properties of hydrostratigraphic units, analysis and design protocols for tunnelling near surface and at great depth, stability of large natural and cut slopes, and geomechanical risk assessment for mining.

The Master of Science in Applied Geology (Non-Research Pattern II and III)

The Master of Science in Applied Geology is a one-year program leading to enhanced knowledge in Mineral Exploration/Resource Geology or Geological Engineering.

Students interested in engineering geology may also wish to investigate the GeoEngineering Centre (www.geoeng.ca), a collaboration with the Queen's Civil and Mining Engineering departments and with the Royal Military College.

Programs of Study

Master of Science (M.Sc): Regular two-year research program and one-year non-research program in Applied Geology.

Master of Applied Science (M.A.Sc.): Master's program in applied sciences (engineering).

Doctor of Philosophy (Ph.D.): Geological science and applied science programs available.

Master of Earth and Energy Resources Leadership (MEERL): A professional Master's degree, 20 months in duration, 20% residential and 80% online, intended to be completed while students remain employed.

All applicants are accepted under the general regulations of the School of Graduate Studies.

Master of Science

The general requirements for the Master's degrees are as noted below.

Pattern I

The candidate must complete two session-length or four term-length graduate courses. Selection of courses is subject to departmental approval. The student must obtain satisfactory standing in the courses. The student must prepare a satisfactory thesis and successfully defend it.

"To conform with Ontario Council on Graduate Studies guidelines, students enrolled in a Pattern I M.Sc. Program are advised that only one of their four primary courses can contain more than 50% undergraduate students. Exceptions must be approved by the Supervisor(s) and the departmental Coordinator of Graduate Studies."

Patterns II & III: The Master of Science in Applied Geology

This is a one-year, non-research program leading to enhanced knowledge in Mineral Exploration/Resource Geology (Stream A) or Geological Engineering (Stream B). The program normally commences in September and can be completed by the end of April or August of the following year depending on the project. In addition to the normal academic qualifications required for entry to a Master's program, the Applied Geology program requires that candidates should have previous geological/geoengineering experience in industry or with government agencies.

The M.Sc. in Applied Geology degree is based either on a project/course-work program (Pattern II) or a course- work program (Pattern III). Under the project/course-work pattern II program, a student is required to complete six primary term length course credits. The project course is in addition to these six courses and is taken under the code GEOL-898. At least four primary courses must be taken in the Department of Geological Sciences & Geological Engineering. The project culminates in a written report.

The requirements for the course-work pattern III program are eight term length course credits and at least four courses must be in the Department of Geological Sciences & Geological Engineering.

Selection of courses in both the Pattern I and II programs is subject to Supervisor and Graduate Coordinator approval. Students must obtain a satisfactory standing in all courses in both pattern programs.

Doctor of Philosophy

The department requires that new Ph.D. candidates take a comprehensive examination within 1 year of the start of their program, to be given by an examining committee which includes the supervisor. The academic strengths and deficiencies identified in this way are taken into consideration in designing programs of graduate courses for these students.

Candidates proceeding by thesis to any degree are expected to become familiar with the literature of their subjects, in whatever language it is written.

GERMAN LANGUAGE AND LITERATURE

Head
Santeramo, D.

Graduate Coordinator
Arndt, C.

Professor
Pugh, D.V.

Associate Professor
Scott, J.

Assistant Professor
Arndt, C., Hosek, J.

Facilities

Apart from the Stauffer Library, where most of the German library resources are housed, the graduate program is also served by a reference reading room and computer facility in Kingston Hall, where all the Modern Language departments are located.

Special Regulations

While research for theses must be done under the direction of the graduate program, credit for some graduate courses may be granted, with the permission of the graduate program, for equivalent courses taken at a recognized university in a German-speaking country.

Financial Assistance

In addition to the fellowship and scholarship support available to graduate students, the program offers a number of teaching assistantships and tutorials to suitably qualified students.

Fields of Research

In accordance with the scholarly interests of individual staff members and the holdings of the Stauffer Library, the following main areas of research are recommended to graduate students: Sturm und Drang, Goethe, and Weimar Classicism (D.V. Pugh); 19th-century literature (C. Arndt); 20th-century literature (J. Hosek, J. Scott). Research in comparative literature and literary theory may be pursued in special circumstances and, where appropriate, in collaboration with other departments. All students should obtain more detailed advice on available resources for research from the Coordinator of Graduate Studies and/or individual staff members before deciding on their thesis topics. Theses should be styled in accordance with the latest MLA Style Manual.

Master of Arts

GRMN-800 is additional to the following program requirements.

Students may choose one of the following program patterns: i) four half-courses and a thesis of approximately 100 typed pages; ii) six half-courses and a thesis of approximately 50 typed pages; iii) eight half-courses and an oral examination demonstrating familiarity with the tools and methods of literary scholarship and competence in a specialized area of their choice.

Doctor of Philosophy

GRMN-800 is additional to the following program requirements.

The doctoral program consists of a thesis and six half-courses beyond the master's level. Students must also demonstrate a reading knowledge of at least one language in addition to German and English and pass a diagnostic test in German language and literature. For further details see http://www.queensu.ca/german/.

GLOBAL DEVELOPMENT STUDIES

Head
Epprecht, M.

Coordinator of Graduate Studies
Taylor, M.E.

Professor
Dubinsky, K.E., Epprecht, M., McDonald, D.A., Soederberg, S.

Associate Professor
Day, R., Jefremovas, V., Taylor, M.E.

Professor Emeritus
Lele, J.K.

Cross-Appointed Associate Professors
Goebel, A., Salzmann, A., Weldemichael, A.

Cross-Appointed Assistant Professor
Robinson, D.

Continuing Adjunct
Hostetler, M., Kumar, P., Lovelace, R.

Departmental Facilities

Study Space

DEVS students have a dedicated study/lounge area in Mackintosh-Corry B400 (next door to the DEVS Program Office). Carrels are allocated on a first-come, first-served basis. Lockable file drawers are available to store your belongings. A separate office across the hall is available for TA office hours.

Library and Research

The Queen's library system has invested heavily in its development studies holdings, allowing Queen's students and faculty access to a comprehensive range of online journals covering all facets of the discipline alongside building a substantial holding of books and monographs in the field. For further enrichment students are encouraged to explore non-degree electives such as FRST-105* (Reading French Course) and School of Graduate Studies (SGS) courses and seminars.

Financial Assistance

All students will be considered for funding from a combination of Queen's Graduate Awards (QGA), teaching assistantships (TA-ships) in the department's undergraduate courses, contributions from research grants and contracts, internal scholarships and awards, and external scholarships and awards. Stipends are typically paid in three equal instalments throughout the year.

Students are automatically considered for QGA and TA-ships when accepted each academic year. TA-ships require up to a maximum of 10 hours a week of tutorial leadership, preparation, marking, and other duties. A normal load would be two TA-ships per academic year but this may be reduced subsequent to the initial offer.

TA-ships are regarded as both a source of funding and as an important element in the student's professional development.

Where research grants permit, or when students earn a scholarship from outside the department, an effort is made to offer top-up funding.

International Opportunities

DEVS offers an undergraduate course in the winter term on Cuban culture and society, with a summer-term component at the University of Havana in which graduate students may also enrol as a Directed Reading course.

Students may also take advantage of research and internship possibilities in the UK through the International Study Centre. The Centre is located in Herstmonceux Castle, East Sussex, and offers access to the vast holdings of the University of Sussex Library, very modestly priced accommodation and transportation into nearby London, and excellent networks among the UK international development scene.

DEVS faculty, meanwhile, often have major collaborative research projects underway with partners in Africa, Latin America, Asia, and in Native communities in Canada.

Successful applicants may be able to link up with these global partners to facilitate fieldwork or other fruitful academic engagement.

Programs of Study

Master of Arts (MA)

The MA program has been designed with two streams: a course-based Master's and a research-based Master's. All students are initially accepted into the one-year course-based stream. Interested and qualified students may then apply to switch to the research option with up to an additional full year to complete.

The ***course-based stream*** will focus on the development of conceptual thinking and analytical and interpretive skills. This stream does not demand primary research resulting in a thesis; instead students will complete a library-based major research project (MRP) of 50-60 pages (DEVS-898). The MRP will deal with a specific interdisciplinary question directly relevant to Global Development Studies. Six half courses, which must include DEVS-801* and DEVS-802* are also required under this option.

The ***research-based stream*** will follow the traditional sequence of graduate training with advanced courses and the undertaking of extensive research. Four half courses, which must include DEVS-801* and DEVS-802*, are required under this option. The research will result in the submission of a written thesis (DEVS-899) of between 75-100 pages that demonstrates the student's ability to produce original work. This option requires an application with a well-developed proposal, the support of a supervisor, and a minimum GPA of 3.7. The deadline for application is January 15. Please note: the department will make efforts to assist with funding for the second year, but cannot guarantee second-year funding.

For both streams, students may select up to two courses from related departments and programs. Refer to the Global Development Studies website for details on suggested courses. Students also have the option to undertake as one of their required courses a reading course DEVS-890*, which allows in-depth study of a specific topic.

The overall objective of the Master's program is to offer students a well-rounded perspective of development debates, with a focus on foundational theoretical and methodological concepts. Our vision values a combination of intellectual engagement and practical skills, imagining and working toward a more equitable world.

Doctor of Philosophy (PhD)

The overarching objective of the PhD in Global Development Studies is to provide a coherent and sequenced programme of training to help graduate students acquire a range of diverse and transferable skills. Alongside the primary academic skills of research, teaching, information management, communication, and critical analysis, the programme cultivates a broader spectrum of abilities. These include organisational skills such as project development and management, problem-solving techniques, working with partners, funding applications, and developing cross-cultural experiences.

The programme is designed to be completed within 48 months.

Year 1: Fall and Winter terms: The programme requires all students to take four courses (12 units) which will consist of four classroom-based seminars taken during the first year. This includes our core courses (DEVS 801, DEVS 802, DEVS 803 and DEVS 950) and one optional course from within DEVS or a cognate department. Students who have already taken our core courses as part of their MA degree will either be fast tracked into the PhD or, if deemed necessary by the Graduate Chair, will find alternate topics courses to complete this requirement.

Spring and Summer terms: Students establish their supervisory committee, begin to prepare their comprehensive exam literature lists, and consider the first stages of building their research proposal.

Year 2: During their second year, students undertake three tasks:

- First they prepare for and complete their comprehensive exams.
- Second, as part of their comprehensive exam process, the student also submits a course syllabus that they have prepared on their chosen research topic.
- Third, on completing the comprehensive exams, the student submits and defends a formal research proposal that provides the analytical and methodological basis for their PhD research. This is examined orally by a committee of three, including the students' supervisor and two assessors, at least one of which will be from within DEVS. After defending their PhD proposal, the student will progress to fieldwork (if applicable)

Year 3: Students complete field research and/or an internship. In consultation with their supervisor and committee, they begin to write draft chapters towards their thesis.

Year 4: Students write up their PhD thesis, which they submit for defence, allowing a firm completion date within the stipulated 48 months from the beginning of the programme.

Internship Support: For students seeking to undertake an internship component to their PhD degree, the department encourages, supports and recognises this is an important means of generating experience and knowledge. In this respect, a research-orientated internship would be an acceptable replacement for more-standard academic research, and the student would be aided in searching for a suitable internship. Students that undertake an internship are encouraged to devote a chapter of their thesis to reflecting critically upon their experience.

HEALTH QUALITY

Director (Nursing), Head (Anesthesiology & Perioperative Medicine)
Medves, J., & Parlow, J.

Associate Director (Health Quality Programs)
Sears, K.

Professor
Medves, J., Parlow, J., Rudie, K.

Associate Professor
Almost, J.[1], Godfrey, C.[2], Johnson, A., Rotter, T., Sears, K., Tregunno, D. Wilson, R., Woo, K.

Assistant Professor
Duhn, L. Egan, R., Knutsen, W.

Adjunct Professor
Parush, A., Zoutman, D.

Adjunct Associate Professor
Spalding, K.

Adjunct Assistant Professor
Ilan, R., Rolnitsky, A.

1 On sabbatical July 2018- June 2019
2 On sabbatical January 2018-December 2018

Master of Science in Health Quality (M.Sc. [H.Q.])

Program Structure

The Master of Science in Healthcare Quality (M.Sc.[H.Q.]) degree will prepare professionals for practice, research and education in the developing area of Health Quality, Risk and Safety. This two (2) year, part-time, interdisciplinary course-based program consists of eight (8) courses, including a supervised project. Participants will

have two (2) mandatory, one-week intensive sessions each year in July or August; the remainder of the program will be a combination of synchronous and asynchronous study using interactive online videoconferencing.

Program of Study

The objective of the M.Sc.(H.Q.) is to prepare individuals who are skilled and capable of linking theoretical foundations of quality, risk and safety with practical applications in healthcare settings, and to assume leadership roles to promote excellence. These skills will be achieved through course work; networking with fellow students, national and international faculty; and a program project.

The specific program objectives are to prepare graduates who will:

1. Promote, innovate and disseminate, in theory and methods, the discipline of Quality, Risk and Safety in Healthcare.
2. Engage in research that will enhance quality improvement, risk reduction and promote safety within the healthcare system.
3. Systematically examine, evaluate and measure and apply current tools and approaches for system improvements.
4. Assume leadership roles in their organizations to ensure the patient safety mandate is fulfilled.
5. Practice health care safely in the 21st century with the competencies outlined by Canadian Patient Safety Institute (CPSI) and the World Health Organization (WHO).
6. Practice in an interdisciplinary environment understanding perspectives of other disciplines and incorporating patient perspectives on quality and safety, and have the capacity to move beyond their immediate local environment to inspire change at the policy level.

The program is of interest to practicing professionals, such as healthcare managers, nurses, physicians, pharmacists, allied health professionals, lawyers, engineers, business leaders, engineers, healthcare architects, IT specialists, and medical physicists. In addition, the program may appeal to those who wish to gain additional education and credentials to move into a healthcare quality position or role.

Applicants to the M.Sc.(H.Q.) program

Admission requirements are:

- Graduation with a minimum of a second class standing of 3.0 GPA from an accredited, baccalaureate-granting University
- A baccalaureate in a healthcare discipline, law, business, engineering, or policy studies is preferred;
- Undergraduate course in statistics and evidence of an understanding of research methodology, and/or quality improvement experience;
- A statement of interest in the program (maximum 2500 words) is requested to match the applicant's academic and work background with the objectives of the program; and
- A current resume or curriculum vitae (CV)

Applicants will be helped to develop their HQRS-898* project and ensure they have the most appropriate course instructor as a supervisor. The Course Professor may also assist in finding mentors from practice settings to help promote a network for graduates on completion of the program.

The Program

Foundation Courses (Required)

- HQRS-840* Introduction to Quality, Risk and Safety
- HQRS-841* Process Improvement in Healthcare
- HQRS-842* Research and Evaluation Methods to Assess Quality, Risk and Safety
- HQRS-844* Law, Risk and Healthcare
- HQRS-845* Organizational Behaviour in Healthcare
- HQRS-846* Human Factors in Healthcare
- HQRS-847* International Perspectives on Public Policy, Economics, and Quality Healthcare

Research (Required)

- HQRS-898* Project in Healthcare Quality

*Denotes half courses (3.0 credit units).

Doctor of Philosophy (PhD) in Health Quality

Program Structure

The PhD in Health Quality will prepare experts who will improve the delivery of healthcare through teaching, developing new methodologies and theoretical frameworks, as well as testing innovation in the field of health quality. The PhD in Health Quality program offers a collaborative approach to comprehend and address the complexities within the healthcare system. Graduates of the program will be prepared to take senior leadership roles in health quality portfolios in practice and policy settings across Canada and will also be educated to assume tenure track positions in university programs. While the degree is research intensive, it will also be grounded in pragmatism and will help prepare independent researchers for quality improvement research and developing leadership capabilities in health settings.

The PhD in Health Quality program is a four (4) year, interdisciplinary program using a combination of synchronous and asynchronous study using interactive online videoconferencing. The PhD in Health Quality program consists of five (5) courses in year one, including an internship over the summer months. The internship will be tailored to the learners' interests and to broadening their perspectives on health quality. In the fall term of year two, students will complete their written comprehensive exam. The comprehensive exam will be a take home two (2) week written submission. In the winter and summer terms of year two (2) students will focus on their PhD thesis, and complete HQRS-905* Current Topics in Health Quality.

Program of Study

The program learning objectives of the PhD in Health Quality are:

- prepare health quality professionals for leadership roles in practice, education and research
- provide learners with skills to apply theoretical and practice knowledge of health quality, risk and safety to enhance safer healthcare for Canadians
- integrate theoretical and practical opportunities for learners to ensure graduates have acquired applied skills in quality, risk and safety
- ensure learners can articulate policy and legislative responsibilities and accountabilities for safer healthcare for Canadians
- support learners to apply for grants and awards to support research in health quality, risk and safety

The program learning outcomes are that graduates will be able to:

- adopt and adapt conventional models of safety, risk and quality from multiple disciplines through critical reflection and analysis to answer health quality improvement problems
- advance knowledge of sociopolitical and organizational contexts about health quality education, research and application in practice
- critically appraise the philosophical, theoretical, and empirical foundations of the discipline of improvement science
- engage in all aspects of research including the philosophical stance, to methodology, methods, implementation, data collection, analysis, results and knowledge translation
- create media to publicize and disseminate quality improvement projects and research.
- design and justify the current state of improvement science from a theoretical perspective

Applicants to the PhD in Health Quality Program

Admission requirements are:

Applicants who have a project based or thesis-based research master's degree in health, health-related law, business, architecture, or engineering will be eligible to apply for admission. Potential applicants who have master's degrees in other disciplines would be encouraged to discuss the suitability of the degree with the Associate Director (Health Quality Programs) prior to applying. The overall grade point average required is B+ at the master's level.

Applicants from under-represented groups will be encouraged to apply and specific recruitment will be targeted to ensure the applicant pool reflects the population of Canada. As the program will be offered in a hybrid format, access to the program is unlikely to be a barrier as students will be required to be on campus for one-week periods at select times over the four years.

We will seek funding through advancement activities to support travel for students coming from remote areas or great distances and those in financial need.

The Program

- HQRS 900* Philosophy of Health Quality Science

- HQRS 901* Research and Theory of Change Management and Leadership
- HQRS 902* Qualitative Methods for Research in Health Quality
- HQRS 903* Quantitative Methods for Research in Health Quality
- HQRS 904* Internship in Health Quality
- HQRS 905 * Current Topics in Health Quality
- HQRS 999* Thesis

*Denotes half courses (3.0 credit units)

HISTORY

Chair
Manley, R.

Associate Chair
McNairn, J.

Chair of Graduate Studies
Jainchill, A.

Professor
Akenson, D.H., Carson, J.T., D'Elia, A.F., Dubinsky, K.E., Errington, E.J., Greenfield, R.P.H., Smith, T.B., van Deusen, N., Woolf, D.

Associate Professor
Adelman, H.T., Brison, J., Caron, C.-I, Chowdhury, A., Collins, J., Currarino, R., den Otter, S.M., English, A., Haidarali, L., Hill, E.M., Husain, A.A., Jainchill, A. Manley, R., McNairn, J., Pande, I., Parker, D.S., Salzmann, A., Siljak, A., Walker, B., Weldemichael, A.

Assistant Professor
Pasolli, L.

Professor Emeritus
Christianson, P.K., Duffin, J.M., Jeeves, A.H., Mah, H., Malcolmson, R.W., McCready, W.D., Smith, G.S., Stayer, J.M., Van Die, M.

Cross Appointed
Bruno-Jofré, R. (Education), Christou, T. (Education), Epprecht, M. (Global Development Studies), Healey, J. (History of Medicine)

Departmental Facilities

The Stauffer Library holds primary source material for advanced historical research in Canadian, American, European, and Commonwealth history. The manuscript collections of the Queen's University Archives, holdings of printed governmental documents, collection of rare Canadiana, microfilm copies of PAC/Department of

Labour materials, and numerous Canadian newspapers on microfilm form a comprehensive scholarly resource.

The Duke of Richmond Papers, the early records of the Presbyterian Church in Canada, the William Bell diaries, and the Cartwright, Kirby, Macaulay, Landon, Stone, Tett, Parrott, and Treadwell Papers are some of the collections containing material on the early social and economic development of Upper Canada. On the local level, research is facilitated by the records of the City of Kingston, and of numerous other individuals, associations, institutions, and businesses. For the study of Canadian economic history, resources include the papers of the Calvin Company, Redpath Sugar Company, Canada Steamship Lines, Macpherson-Crane and Company as well as the records of a number of local firms. For Canadian history since Confederation, the Archives contain the papers of Alexander Mackenzie, Mackenzie Bowell, Charles Mair, W.D. Gregory, Sir Allen Aylesworth, Walter Mitchell, Charles A. Dunning, T. A. Crerar, Herbert A. Bruce, Norman Rogers, C. G. Power, Sir Joseph Flavelle, Donald Gordon, J.M. Macdonnell, John Buchan, B.K. Sandwell, Grant Dexter, George Chipman, Norman Lambert, Donald C. MacDonald, G. Grube, Adam Shortt, A.R.M. Lower, and John T. Hackett. This material is supplemented by the microfilmed papers of Sir Wilfrid Laurier, John A. Macdonald, Borden, Arthur Meighen, William Lyon Mackenzie King, R.B. Bennett, John Diefenbaker, Louis Riel, Alexander Morris, the 9th Earl of Elgin, the Earl of Dundonald, Sir Edward Grigg, and the records of the United States State Department, Navy and Army, concerning the War of 1812, naval exploration, and the Civil War.

The Library's holdings of printed Canadian governmental documents, dominion and provincial, include complete sets of debates and sessional papers of the Parliament of Canada, and the journals of the Legislature of Upper Canada. In addition, the library has substantial holdings of United Nations, United States State Department, British, New Zealand, Indian, Pakistani, South African, Australian, and French documents. The Stauffer Library is a depository for published documents of the United States government. Holdings include the Journals of the House of Representatives and Senate and most of the Congressional Record. The archival and governmental documents are supported by collections of rare Canadiana and microfilms of a broad range of Canadian newspapers.

The Stauffer Library is strong also in British, British Imperial and Commonwealth history. The South African holdings rank with the best collections in North America. The Archives hold all the Colonial Office confidential prints relating to South Africa before 1916. The Parliamentary Debates and Parliamentary Papers are all available, and the collection contains long runs of newspapers on microfilm. The Library has acquired the Carter Karis collection of African political materials on microfilm. This is a very

important source for the development of African nationalism in South Africa. For students of imperial policy, the British documentary section, supported by newspaper and periodical holdings, is invaluable. In addition, scholars in military history will find help at the Massey Library at the Royal Military College of Canada. The Canadian holdings in Stauffer are also of use to Commonwealth and military students.

The Health Sciences Library houses a rapidly growing collection of secondary works on the history of Western Medicine. All pre-1820 medical monographs published in the United States have been acquired on microfilm. A complete collection of medical periodicals published in Canada before 1911 is available on microfiche. Such sources are complemented by primary material in the Archives, such as the Kingston General Hospital collection, and an expanding group of secondary works on the history of science at the Douglas Library.

The Irish collection is growing. It includes long runs of official documents and supporting materials stretching back to the 16th century.

In medieval and early modern European studies, printed sources are available in the Stauffer Library for research in English medieval history, the Central European Reformation and in many aspects of the late medieval history of the Catholic Church. The library holds nearly all published governmental records for English and Scottish history of the medieval and Tudor periods, as well as a substantial proportion for the period 1603-80. Holdings of other documentary as well as narrative sources are also strong.

There are large collections of newspapers and other sources on the Old Regime and the French Revolution. For research in 20th Century French History, the Stauffer Library contains the parliamentary debates and the complete collection or long runs of some of the leading 20th century newspapers, including Le Temps, Le Monde, L'Humanité, Le Figaro, Le Populaire, La Croix, Le Peuple, l'Action Française, Gringoire, Je Suis Partout, L'Express, Témoignage Chrétien, France-Observateur. The Library also has collections of many other important journals and newspapers.

Proximity to the National Archives and other collections in Ottawa, including the Parliamentary Library, makes it possible for students to supplement their work at the university by periods of research in the capital.

Financial Assistance

Applicants should consult particulars of the national and provincial awards listed earlier in this calendar. They are advised to submit applications for these without waiting to hear if their applications to the graduate program have been accepted. Attention is drawn to the closing dates for some fellowship applications, e.g. Commonwealth Fellowships in October, Ontario Graduate Scholarships by the beginning of November, and Social Sciences and Humanities Research Council Doctoral Fellowships by mid-November. Please see the History Department website for more information about funding.

The department employs graduate students as teaching assistants. These appointments are made primarily on academic merit and in order to provide students with teaching experience and additional financial support. For details, consult the Graduate Coordinator.

Fields of Concentration

Canadian history; African history, Latin American history, Modern European history, American history and the Middle East. We offer various transnational and comparative histories (gender and sexuality, public policy, religion, cross cultural encounters, pre modern reigious cultures, ethno-history of North Amemrica). Please see the History Department website for a current list of fields.

Programs of Study

Applicants are accepted under the general regulations of the School of Graduate Studies. Admission to the M.A. program is normally limited to students with a minimum strong upper second-class standing in the upper years of their B.A. programs. Admission to the Ph.D. is normally limited to applicants with first class standing on their M.A. work.

All incoming full-time graduate students enrolled in degree programs must take a minimum two regular graduate history courses in the department. Part-time students enrolled in degree programs may enroll in one course per session but must take the minimum two graduate history courses for their degrees.

HIST-895*, HIST-896*, HIST-897: Directed Reading and HIST-861/R.M.C. may not be counted for credit as one of these minimum two graduate courses.

Master of Arts

The department offers alternative options for the master's degree:

M.A. Pattern I

Two session-length or four term-length graduate courses in History or three term length graduate courses in History and one term-length course in another department plus a Master's thesis HIST-899, recommended length 100 pp., maximum length 150 pp. Courses taken outside of the department of History will need the prior approval of the Graduate Committee. Such approval will be granted only when the proposed course is in an area not available within the department. The Master's thesis will be subject to examination under the general regulations of the School of Graduate Studies (See Sections Thesis and Research in this calendar).

The Pattern I M.A. can be completed in twelve months but may take longer. It should be completed within 16-20 months from initial registration.

M.A. Pattern II

Three session-length graduate courses or term-length equivalents plus a Master's cognate essay (HIST-898), recommended length 40 pp, maximum length 50 pp. The Master's essay will not be subject to an oral defence but will be read by one member of the department in addition to the essay supervisor.

The Pattern II M.A. is designed to be completed within twelve months.

There shall be no switching from Pattern II to Pattern I or from Pattern I to Pattern II after January 15th of the first year of registration in the program.

A minimum of one and one half graduate session-length courses (or three term-length courses) must be taken in the History department, but a third course of the three-course, Pattern II option may be taken outside the department.

In either option, the student must choose the courses in consultation with the instructors and the Graduate Coordinator. One of the courses must be closely related to the subject of the student's thesis or essay. In the three-course pattern, the three courses are normally not to be taken in the same field, and only in exceptional circumstances will the three-course option be open to part-time students.

Doctor of Philosophy

Doctoral candidates in History must satisfy requirements in the following areas:

I. Two session length courses and one half session required course (HIST-901), taken in the Fall/Winter terms of the first year of the programme.
II. Field requirements (1 major and 1 minor).
III. Thesis proposal and qualifying exam.
IV. Defence of a doctoral dissertation.

The seminars, reading courses and field examinations are selected to enable a candidate to study different national areas, comparative and transnational areas, and/or periods of history. The candidate's entire program must be approved by the Graduate Committee of the Department of History.

The doctoral program will require at least three years of full-time study for a candidate who has substantial undergraduate and MA training in history.

Please see the History Department website for a more comprehensive description of the doctoral programme.

INDUSTRIAL RELATIONS

Director, MIR Program
Chaykowski, R.P.

Professor
Chaykowski, R.P.

Associate Professor
Fisk, G.M., Hickey, R.S., Lilius, J.M.

Assistant Professor
Weinberg, B.

Professor Emeritus
Kumar, P.

Adjunct Assistant Professor
Leighton, D.

Facilities

The Master of Industrial Relations program is located on the second floor of Robert Sutherland Hall, in close proximity to the Mackintosh-Corry Social Science Complex, the Faculty of Law, Goodes Hall, the School of Business, the Law Library, the main Arts and Humanities Library, Stauffer Library, and the Industrial Relations Centre. Most classes are held on the first floor in classrooms; a student lounge and study space is also available to students on the first floor.

Purpose and Philosophy

Queen's University offers a Master of Industrial Relations (MIR) degree program aimed at developing the human resource management and labour relations knowledge and competencies that employment relations professionals need to fulfill their professional roles. The MIR provides students with:

- a thorough grounding in labour relations and human resource practice;

- an understanding of the fundamentals of the laws governing the individual employment and collective bargaining relationship;
- the capacity to collect and analyze data on current workplace issues and interpret research in the field;
- an understanding of evolving employment relationships and of organizational dynamics;
- essential skill sets for HR/LR professionals (e.g., consulting, facilitation, leadership, coaching, team building and communication).

The purpose of the MIR program is to prepare students for a variety of career opportunities in labour relations, human resources management, and line management which requires industrial relations and human resource knowledge and skills. Some graduates also establish careers in applied and policy oriented research, non-university teaching and consulting in industrial relations. The program attracts new graduates as well as career employees wishing to renew or upgrade their qualifications.

The philosophical orientation of the program is multi-disciplinary, stressing the application of knowledge and analysis to the employment relationship and workplace. The curriculum consists of both required courses and electives. The required courses provide a thorough grounding in industrial relations and human resources theory and practice. Opportunities for greater specialization are provided through electives and skills seminars. Electives can be selected from within the school or across the range of university graduate offerings with the permission of the MIR Program Director. An elective can also be made up of three analytical and research skills seminars - each of which focuses on a specialized topic and consists of twelve instructional class hours. The program's unique design attracts students with diverse academic and career backgrounds, from across Canada and abroad.

Financial Assistance

Special awards available include the Clarence J. Hicks Fellowship in Industrial Relations, Don Wood Fellowships, Cameron-Wood Prize, the Goldenberg Scholar's Award, the Robert Grant Fellowship and the Lia Dower Memorial Award.

Admission and Residence Requirements

Master of Industrial Relations Program

This twelve-month Master of Industrial Relations Program requires three terms of full-time study on campus. Admission requirements are a four-year bachelor's degree with upper second-class standing from a recognized university and demonstrated evidence of strong academic potential. Applicants whose native languages do not include English must obtain a passing score in one of the accepted tests of English language proficiency. Information can be found can be found in the General Regulations of the School of Graduate Studies here: International Students. Applicants **are not required** to write the GRE or GMAT.

Professional Master of Industrial Relations Program

This Master of Industrial Relations Program is a part-time program of study where the course load is normally distributed over three years. Admission requirements are a four-year bachelor's degree with upper second class standing from a recognized university and demonstrated evidence of strong academic potential, as well as three years of full-time employment experience in the employment relations field (or equivalent). Applicants with a strong history of relevant employment experience with a bachelor's degree of less than four years in duration will be considered on a case by case basis. Applicants whose native languages do not include English must obtain a passing score in one of the accepted tests of English language proficiency. Information can be found can be found in the General Regulations of the School of Graduate Studies here: International Students. Applicants **are not required** to write the GRE or GMAT.

Programs of Study

Master of Industrial Relations (M.I.R.)

The MIR degree requires that students take courses with a total combined weight of 33 credit hours. This total includes seven required core courses (totalling 21 credit hours), together with electives totalling 12 credit hours).

The course load is normally distributed over the fall, winter and summer terms of study and the curriculum is focused to provide a challenging standard of excellence in the field.

Required Courses

- MIR-810* Unions and Collective Bargaining
- MIR-823* IR and Labour Law I
- MIR-824* IR and Labour Law II

- MIR-830* Human Resource Management
- MIR-840* Labour Economics and Industrial Relations
- MIR-850* Organizational Behavior
- MIR-897* Analytical Methods in Industrial Relations

Professional Master of Industrial Relations (P.M.I.R)

This part-time graduate program is for experienced professionals working in labour relations or human resources management who wish to significantly enhance and upgrade their academic qualifications. The PMIR degree also requires that students take courses with a total combined weight of 33 credit hours, but the program is spread out over a 3 year period. This total includes the same seven required courses (totaling 21 credit hours), together with electives totaling 12 credit hours).

The course load is normally distributed over one weekend per month during the fall and winter periods, and 2 full weeks in the summer term of study and the curriculum is focused to provide a challenging standard of excellence in the field. Up to two (3.0) credit courses per academic year may be offered off-campus (e.g. Toronto; Ottawa).

Required Courses (the same 7 courses, but offered in a different delivery structure.)

- MIR-810 Unions and Collective Bargaining
- MIR-823 IR and Labour Law I
- MIR-824 IR and Labour Law II
- MIR-830 Human Resource Management
- MIR-840 Labour Economics and Industrial Relations
- MIR-850 Organizational Behavior
- MIR-897 Analytical Methods in Industrial Relations

Note: Where a student demonstrates a sufficiently adequate background in the subject matter of one or more required courses, the student may be permitted to take a substitute course with the permission of the Director, MIR Program. In such cases, the student may be required (i) to take an advanced course in the same disciplinary field as the required course; or (ii) take a substitute course selected from related graduate courses offered by other departments through the School of Graduate Studies or the Faculty of Law.

Elective Courses

Elective courses **for both programs** include some combination of: (i) elective courses, each with a weight of 3 credit hours; and (ii) skills seminars, each equal to one credit hour, or on the rare occasion (iii) a research essay, which is equivalent to 6 credit hours.

The elective course component of the programs is designed to permit in-depth study in one or more areas and to provide flexibility to meet diverse student interests and career goals. MIR students select their optional courses from those offered by the MIR program or related graduate courses offered by other departments through the School of Graduate Studies, and by the Faculty of Law. Optional courses are subject to approval by the course instructor and the MIR Program Director.

Recent elective offerings are as follows (not all courses are offered each year):

- MIR 825* Human Rights Law
- MIR 841* Labour Policy
- MIR 851 * Relationships and Organizations
- MIR-875* Finance and Accounting £or HR/LR
- MIR-886* Negotiations, Conflict Resolution and Workplace Behaviour
- MIR-891 * Directed Special Studies
- MIR-889* Advanced Topics in Human Resources
- MIR-891* Directed Special Studies
- MIR-898 Master's Research Paper (MRP)

These seminars are designed to provide students with critical analytical, research, and interpersonal skills required of Human Resources and Labour Relations professionals in the workplace.

Each seminar meets over a four-week period, and students are required to take three seminars which together will be considered a half-course. Students also have the option of taking three additional seminars, which may be counted as an elective credit. Students will not be permitted to take more than six seminars. Students who wish to drop a seminar must do so before the second scheduled class or with the permission of the instructor. The seminars are:

- MIR-802 Seminars in Training and Development
- MIR-803 Seminars in Analytics and Metrics
- MIR-805 Seminars in Labour Relations
- MIR-806 Seminars in Human Resource Management
- MIR-807 Seminars in Negotiation and Collective Bargaining
- MIR-808 Seminars in Work Teams

- MIR-809 Mediation Skills
- MIR-811 Seminars in Health, Safety and Wellness
- MIR-812 Seminars in Employment Ethics and Legal Issues
- MIR-813 Seminars in Performance Management
- MIR-815 Seminars in Diversity, Equity and Inclusion
- MIR-817 Seminars in Contract Administration
- MIR-818 Seminars in Leadership
- MIR-819* Labour Arbitration Moot

Joint M.I.R/J.D. Cooperative Degree Program

The M.I.R./J.D. program is a four-year combined degree program. The program is intended for students who wish to combine graduate training in industrial relations with a degree in law to meet the increasing demand for industrial relations specialists with legal backgrounds. In the first year of the program, students complete the M.I.R. degree. In the second, third and fourth years, students complete the law degree and participate in two cooperative placements, earning their full articling credit. Candidates must meet the admission requirements for both programs including writing the LSAT for law. A maximum of five candidates will be admitted each year. Those wishing to apply for the joint M.I.R./J.D. should complete the application forms for both the M.I.R. and J.D. programs simultaneously. Acceptance into both the M.I.R. program and the J.D. program is a prerequisite to admission into the joint M.I.R./J.D. program. For further information students should contact the admissions committee of the M.I.R. program and the Faculty of Law.The program is structured as follows:

1. MIR year (12 months) - students are required to take as their MIR required courses of MIR-810, MIR-830, MIR-840, MIR-850 and MIR-897. As well, students must take Introduction to Legal Skills, Public Law, Contracts and Constitutional Law, through the Faculty of Law. This combination of courses, along with a summer term at the Bader International Study Centre (BISC) or summer electives taken in the MIR program equates to the total required 33 credits needed in order to achieve the MIR degree.
2. J.D. year (8 months) - students are required to take Property, Torts, Criminal Law, Civil Procedure, Labour Law, Employment Law and Collective Agreement.
3. A four month paid cooperative placement follows the second year.
4. J.D. year (8 months) - students are required to undertake a standard course load of upper year law electives that will include the compulsory moot.
5. An eight month paid cooperative placement follows the third year.

6. J.D. term (4 months) - students are required to undertake a standard course load of upper year law electives, and as part of the term, must complete a supervised writing course involving a topic related to their cooperative placement.

KINESIOLOGY AND HEALTH STUDIES

Director
Côté, J.

Associate Director and Coordinator of Graduate Studies
Lévesque, L.

Professor
Adams, M.L.[3], Côté, J., Janssen, I., King, S.J.[1],Lévesque, L., Ross, R.

Associate Professor
Costigan, P.A.[2], Fergus, S., Latimer-Cheung, A.,Martin, L., Masuda, J., Power, E., Pyke, K., Tschakovsky, M.E.

Assistant Professor
Gurd, B., Lee, E.Y., Selinger, J., Szto, C., Tomasone, J.

Cross Appointed Faculty
Adams, M.A., Brouwer, B., Bryant, J.T., Collins, P., Davies, G.A.L., Morin, E.L., O'Donnell, D., Pelland, L.

1 - Seconded as Head, Gender Studies, 01 July 2015 to 30 June 2020
2 - On Academic Leave July 2018-June 2019
3- On Academic Leave July 2018-December 2018

Departmental Facilities

The School of Kinesiology and Health Studies is situated at 28 Division Street. The School's building provides state-of-the-art offices, classrooms, seminar rooms, and laboratories for all graduate programs. Lab areas include Ergonomics/ Biomechanics Research Centre, Exercise Physiology Laboratory, Human Vascular Control Laboratory, Cardio Stress Response Laboratory, Muscle Physiology Laboratory, Physical Activity Epidemiology Laboratory, Health Promotion Laboratory, Psychology of Sport and Physical Activity Laboratory, Socio-Cultural Studies of Health, Sport and the Body Laboratory, and Revved Up Laboratory. Labs contain relevant equipment, computer facilities, interview rooms, video-editing equipment and other laboratory resources for

research. Graduate students also have access to facilities in various cognate departments.

Graduate Student Support

Full-time students who are eligible for funding awards are required to apply for external financial support through CIHR, SSHRC, and NSERC as applicable and if eligible, and internal OGS funding support if eligible. Consideration for internal fellowship funding opportunities is contingent upon application to these external funding sources. All students are automatically considered for teaching assistantships.

Admissions Requirements

A minimum of a B+ standing or 77% overall average in a four-year bachelor degree or equivalent program is required for admission to the School's Master's degree programs. Students may be required to complete an undergraduate course-qualifying year if they do not meet these criteria.

Programs of Study

The School of Kinesiology and Health Studies offers a multi-disciplinary graduate program that includes studies in Biomechanics Ergonomics, Physical Activity Epidemiology, Exercise Physiology, Health Promotion, Psychology of Sport, and Socio-Cultural Studies of Sport, Health and the Body at both master's and doctoral levels.

Master of Arts and Master of Science

The Master's degree programs in the School of Kinesiology and Health Studies are organized into areas of expertise including:

1. Sport Psychology: The study of psychological dimensions of health, physical activity and sport.
2. Socio-Cultural Studies of Sport, Health and the Body: The study of sociological dimensions of health, physical activity and sport.
3. Physical Activity Epidemiology: The study of the determinants of physical activity and the influence of physical activity on health within a framework of population or public health.

4. Health Promotion: The science and art of promoting health, preventing disease, prolonging life and improving quality of life through the organized efforts of society.
5. Exercise Physiology: The study of metabolic and cardio-pulmonary responses to acute and chronic exercise, exercise testing and prescription for special populations.
6. Biomechanics/Ergonomics: The study of the mechanical aspects of human motion and applications to occupational performance.

Program Pattern I Degree Requirements

The degree requirements for students in a Pattern I Master's program are:

a. The equivalent of at least four graduate level one-term courses.
b. Other courses, as advised by the student's supervisor to ensure that the student has a background adequate for undertaking the proposed thesis topic.
c. Candidates for the M.A. program in socio-cultural studies are required to take KHS-869* and KHS-873*.
d. A master's thesis (KHS-899) weighted at one-half the total program. The Master's thesis must be defended orally.
e. Candidates for the M.Sc. program may only take one of KHS-869* or KHS-873*.
f. SGS-804: Course in Human Research Ethics (CORE).

Program Pattern II Degree Requirements

In exceptional circumstances some students may be permitted to complete a program of study based on course work and a major research paper (Program Pattern II). The degree requirements for students in a Pattern II Master's program are:

a. The equivalent of at least seven one-term graduate level courses of which at least three courses must be taken within the School.
b. Additional courses at the discretion of the School's Graduate Coordinator to ensure adequate background in the field of study.
c. A research project (KHS-898) on a specific problem in the field of study. Candidates are expected to work in close contact with an assigned faculty member and to obtain approval for the project from the School's Graduate Subcommittee.

Degree Awarded

All candidates receive their degree in Kinesiology and Health Studies.

Doctor of Philosophy (Ph.D.)

The doctoral program in the School of Kinesiology and Health Studies offers degrees in one of the fields of Applied Exercise Science; Physical Activity Epidemiology and Health Promotion; Psychology; or Socio-Cultural Studies of Sport, Health and the Body. This program conforms to the requirements specified in the general regulations of the School of Graduate Studies. All candidates receive their degree in Kinesiology and Health Studies.

The program involves three stages: preparation for research (course requirements); certification that the preparation is adequate (comprehensive examination); and thesis proposal, research and thesis.

The degree requirements for Ph.D. candidates are:

a. Ph.D. candidates are normally required to complete at least two graduate level courses, chosen in consultation with their supervisor, while enrolled as a Ph.D. candidate in SKHS. Students must complete a minimum of six one-term graduate level courses beyond the bachelor's degree to meet Ph.D. degree requirements.
b. Other courses, as advised by the student's supervisor to ensure that the student has a background adequate for undertaking the proposed thesis topic
c. SGS-804: Course in Human Research Ethics (CORE)
d. Comprehensive examination, which must be defended orally (see below).
e. A Thesis Proposal which must be defended orally (see below).
f. A Doctoral thesis (KHS-999). The Doctoral thesis must be defended orally.

Comprehensive Examination

The comprehensive examination is held after the student has successfully completed the required course work, normally within 18 months of the start of their studies. The focus of the examination is on the candidate's research area and on designated areas of specialization in the broader field of study. The examination consists of two parts: 1) a written component that is based on the theoretical and methodological issues central to the student's program and: 2) an oral examination based on the student's written answers.

Research and Thesis

Each candidate must submit and defend a thesis proposal for approval before proceeding to prepare the final scholarly thesis.

Each candidate must submit a scholarly thesis and defend it at an oral examination.

Complete details of the doctoral program policies and regulations are available on the School's web site at:
https://skhs.queensu.ca/programs/graduate-studies/

LAW

Dean
Flanagan, W.F.

Associate Dean (Academic)
Knutsen, E.S.

Associate Dean (Graduate Studies and Research)
Karton, J.D.H.

Assistant Dean
Cole, H., Morash, D.

Professor
Bailey, M.J., Baines, B., Bala, N.C., Cockfield, A.J., Flanagan, W.F., Green,L., Knutsen, E.S., Lahey, K.A., Pardy, B.B., Peppin, P.J.

Associate Professor
Aiken, S.J., Amani, B., Banks, K., Dahan, S., Freedman, C.D., Karton, J.D.H., Khimji, M.F., McCormack, N., Metcalf, C., Pratt, M.G., Robinson, D., Webber, G., Weisbord, N., Yalden, R.

Assistant Professor
Ewing, B., Henderson, G.E., Imseis, A., Kelly, L.M., King, A., Lamp, N., Thomas, J., Tsuruda, S.J., Vasanthakumar, A., Weinrib, J.

Professor Emeritus
Alexandrowicz, G.W., Baer, M.G., Bale, C.G., Bonham, D., Carter, D.D., Magnusson, D.N., Manson, A.S., Mullan, D.J., Price, R.R., Sadinsky, S., Stuart, D.R., Weisberg, M.A., Whyte, J.D.

Continuing Adjunct Assistant Professor
Hanson, L., Maur, M.J., Osanic, P.M.

Cross-Appointed
Chaykowski, R.P., Kymlicka, W., Lyon, D.

Programs of Study

The graduate law program at Queen's University offers to students from Canada and from countries around the world an intellectually rich and challenging environment for legal learning and scholarship. Queen's offers two graduate degrees in law:

- the Master of Laws (LL.M.) degree, a one-year program with thesis and course-based options;
- the Doctorate (Ph.D.) in Law degree, a four-year program of advanced legal research.

The graduate law program at Queen's is a small, academically oriented program with a global emphasis.

The LL.M. Degree

The Master of Laws (LL.M.) program at Queen's is designed to enable students with a proven record of high academic achievement to engage in intense research, writing and course work under the guidance of established legal scholars with a view to developing knowledge, expertise and skills necessary for an academic career, or a career in areas of the legal profession that demand particularly critical or reflective forms of legal and policy analysis.

LL.M. students are given considerable choice in designing a program of study that suits them. Two graduate courses — Legal Research Methods & Perspectives (LAW-880) and Legal Research & Writing (LAW-881) — are mandatory for all LL.M. students. In addition to these two courses, LL.M. students have three options for completion of the program:

- **Thesis option:** one additional one-term course and a Master's thesis (LAW-899)(not to exceed 35,000 words) that must be defended orally before an examination committee;
- **Mini-Thesis option:** three additional one-term courses and a substantial graduate research project (or "Mini-Thesis")(LAW-898) of 50-70 pages (13,000-18,000 words);
- **Course-Paper option:** five additional one-term courses and a graduate paper of 35-40 pages (9,000-10,000 words)(LAW-897).

Each LL.M. student is assigned a faculty supervisor based on the student's indicated research interests and faculty availability. The supervisor, together with the Associate

Dean of Graduate Studies and Research, will help the student select a course of study appropriate for his or her needs and aspirations, and the supervisor will also supervise the student's graduate research (whether that takes the form of a thesis, mini-thesis or graduate paper). The Faculty makes every effort to help each student design and undertake a program that is appropriate for them, and that can, with diligence, be completed within nine to twelve months. With the permission of their supervisor and the Associate Dean, students may change options during the program, as long as the requirements for one of the options are satisfied prior to completion.

Mandatory and Optional LL.M. Graduate Courses

The two mandatory graduate courses for LL.M. students are:

- Legal Research Methods & Perspectives (LAW-880) – a one-term seminar for graduate students that examines major themes in legal theory and methodology from a variety of different perspectives, with a view to assisting students in the construction of an appropriate analytical framework for their research projects; and
- Legal Research & Writing Seminar (LAW-881)– a one-term seminar designed to assist students in developing the research and writing skills they require to succeed as graduate students. Graduate students who have completed a research and writing course at another law school that is similar to LAW-881 can ask to take a replacement course instead of LAW-881.

A very wide range of optional graduate-level courses in law are offered in conjunction with J.D. courses in the Faculty of Law.

LL.M. Collaborative Program, Specialization in Political and Legal Thought

LL.M. students who undertake the Collaborative LL.M. in Political and Legal Thought must

a. complete the two mandatory graduate courses (LAW-880 and LAW-881); and
b. complete four additional courses, three of which must be designated courses in the Political and Legal Thought specialization, in Law, Political Studies, or Philosophy; and
c. complete a graduate paper (LAW-897).

Study and Completion Times

Students enrolled in the LL.M. program are expected to be in full-time study in Kingston for nine to twelve months, normally from September to August, and are expected to complete all requirements for the degree during that period.

Part-Time Students

In any given year, a small number of part-time LL.M. students may be admitted. The course requirements for part-time students are designed to encourage completion of the degree requirements within a two-year period. Specific information should be requested from the Graduate Studies Assistant at the Faculty of Law. This aspect of our program is mostly geared to people who live near Kingston and are otherwise employed.

Admission Requirements for the LL.M. Program

Applicants holding a bachelor's degree in Law, or equivalent graduate degree, are accepted under the general regulations of the School of Graduate Studies. Because the number of places in the program is limited, high academic standing is an important factor. Professional, teaching, or research experience related to the applicant's area of research will also be taken into consideration.

The Ph.D. in Law

The Queen's Ph.D. in Law involves advanced legal research leading to the completion and oral defence of a doctoral dissertation. The program normally takes four years to complete. Each student works closely with a faculty supervisor and a supervisory committee of two other faculty members (one of whom can be from outside the law school) to fulfill the following requirements:

- Ph.D. students must complete the two mandatory graduate seminars of the Queen's LL.M. program (LAW-880, Legal Research Methods & Perspectives and LAW-881, Legal Research & Writing) if they have not already done so, or if they have not completed similar courses at another institution.
- In their first year, students will take or audit other graduate-level courses relevant to their research topic, as recommended by their supervisor in consultation with the supervisory committee.
- Also in their first year, students will complete selected readings set by their supervisor in consultation with the supervisory committee, with a view to broadening student perspectives and knowledge in relation to their chosen area of research.

- At the end of their first semester of their second year of study, students must pass an oral qualifying exam before a committee composed of the student's supervisor, and a member of a related department or faculty within the University (often members of the student's supervisory committee).The exam focuses upon a draft chapter of the student's dissertation, and the committee will assess the viability of the proposed research topic and the student's readiness to pursue it.
- After the qualifying exam, students must submit a final thesis proposal to be approved by the supervisor, the Associate Dean of Graduate Studies and Research, and one other member of the law faculty (who may be a member of the student's supervisory committee.
- The student must research and write a doctoral dissertation that will not normally exceed 80,000 words (exclusive of footnotes, endnotes, bibliography, appendices, tabulated data, tables of cases and legislation, and table of contents).
- The student must defend his or her thesis orally before a final examination committee comprised of, in addition to the student's supervisor, the Dean of the School of Graduate Studies (or his or her delegate) as Chair, the Dean of Law (or his or her delegate), one other member of the law faculty, and one faculty member from a related department or faculty within the University (these members may be members of the student's supervisory committee), and an external examiner from outside the University.

Study and Completion Times

Doctoral students are expected to be engaged in their studies on a full-time basis. The expected time for completion of the Ph.D. degree is four years.

Admission to the Ph.D. Program

The faculty seeks doctoral students with records of impressive academic achievement and demonstrated scholarly potential. Applicants will normally have a first or undergraduate law degree (LL.B. or J.D. or equivalent) and an LL.M. or equivalent masters-level degree in law. Exceptional applicants may be admitted directly to the Ph.D. program after obtaining a J.D. or LL.B. (or equivalent first law degree), without having completed an LL.M. or equivalent masters-level law degree.

Applicants are accepted under the general regulations of the School of Graduate Studies. Applications are assessed on the basis of academic transcripts and awards, quality and strength of references, merits of the statement of proposed research, research capacities and potential as revealed by previous academic writing, especially

published work, compatibility with faculty resources, in particular the availability of a qualified supervisor and the sufficiency of library holdings in the proposed area of research. Where appropriate, weight may also be given to the ability of the student to participate as a research assistant in an externally-funded faculty research project. Offers made to applicants still in the process of completing a first degree in law will be made conditional upon timely completion of that degree with a satisfactory standing.

Graduate Diploma in Legal Services Management (first offered effective May 2019)

The Graduate Diploma in Legal Services Management (GDLSM) will be offered online and in a part-time format only. Students enrolled in the GDLSM will, after completing the Financial Literacy for Lawyers and Fundamentals of Legal Services Business courses, be able to complete the other courses required to receive the diploma in any order they choose .

The GDLSM is an innovative program primarily because it introduces existing JD students, practising lawyers, and others interested in the legal profession to the business of law.

To receive the GDLSM, students must complete two core courses plus two of three electives. All courses will be delivered fully online and offered up to three times per year based on demand.

For more detailed information please see
website https://graduatediploma.queenslaw.ca/program

Admission to the GDLSM

To be considered for admission, an applicant must hold a minimum of an honours bachelor's degree from a recognized university (with a minimum standing consistent with Queen's regulations for graduate admission). Consideration for admission will be given to students currently enrolled in or who have graduated from a JD (or equivalent) program, and performance in a JD or equivalent will be taken into account in the admissions process. Applicants' undergraduate degree can be in any area of study, as there are many non-law graduates who work in management capacities at law offices to help legal practices become more efficient. In addition, the program will be of interest to those in the consulting field who provide services to legal practitioners, as it will give them better insight into the business of legal practice.

The program is composed of five online courses, of which a student must complete four to receive the Diploma. Two of the courses offered are designated as "core", *LSM-810* Financial Literacy for Lawyers* and *LSM-820* Fundamentals of Legal Services Business*.

Financial Assistance

Students accepted into the Ph.D. and LL.M. programs are eligible for scholarships and fellowships administered by Queen's University. All candidates for graduate work at Queen's may compete for these awards. The Faculty of Law may also be able to provide awards.

Departmental Facilities

Queen's University Library's research collections include millions of print and digital items supported by a strong technology infrastructure and a focus on scholarly communications. Library facilities are heavily used campus hubs with a mix of inviting, accessible learning spaces, computers and collections. Queen's University Library is a member of the Association of Research Libraries and the Canadian Association of Research Libraries.

The William R. Lederman Law Library, part of Queen's University Library, is located on the second and third floors of the Faculty of Law, and the other principal libraries are conveniently located nearby. Along with legal databases from Canada and other countries, the Law Library's print collection numbers about 150,000 volumes with particular strengths in Constitutional and Administrative Law, Criminal Law, Family Law, Feminist Legal Studies, International Law, Labour & Employment Law, Intellectual Property, and Policy. Primary source materials include a robust collection of case law, statutes and regulations (federal and provincial), from Canada (both in print and electronically) and case law and legislation from the U.S., Great Britain and some Commonwealth countries (largely electronically). Most journals, as well as a growing number of books, are available electronically.

All libraries on campus have desktop computers as well as wi-fi. You can use all our databases and electronic materials anywhere in the world – if you're off campus, you'll just be asked to enter your netID and password when you connect to a resource through Queen's University Library.

Policy Respecting Non-Discrimination

It is the policy of Queen's University that no applicant be denied admission to any program on the basis of race, creed, colour, age, sex, marital status, ancestry or place of origin. In addition, the Faculty of Law's Commitment in Principle Relating to Equality Issues extends to the LL.M. and the Ph.D. programs and the J.D. program.

MANAGEMENT - SCHOOL OF BUSINESS

Dean
Saunders, D.

Associate Deans
Chan, Y., Handelman, J., Mufti, S., Murray, E.

Graduate Coordinator
Chan, Y.

Professor
Barling, J.I., Carson, S.[2], Chan, Y., Cleary, S., Cooper, W., Dacin, P., Dacin, T., deBettignies, J., Gagnon, L., Goerzen, A., Handelman, J., Levin, Y. , McGill, J.I., Murray, E.J., Richardson, P., Salterio, S., Saunders, D., Sephton, P., Staples, S., Thornton, D., Webster, J., Welker, M.

Associate Professor
Andrevski, G., Ashworth, L., Brodt, S., Brohman, K., Bu, N., Cannon, W.T., Chakrabarti, A., Ivus, O., Jenkin, T.[2],Kolsarici, C., Kunnumkal, S., Levin, T., Litrico, J.B, Malsch, B., Miners, C., Mufti, S., Murphy, P., Nalca, A., Nediak, M., O'Grady, S., Ovchinnikov, A., Packalen, K., Pazderka, B, Purda, L., Raver, J.[2], Riordan, R.[2], Roy, J., Schneider, H.,Shearer, T., Suo, W., Thiele, V., Thompson, M., Topaloglu, S., Wang, W., Wong, K.

Assistant Professor
Addas, S., Brower, J.[1], Calluzzo, P.[1], Chaigneau, P., Dudley, E., Hou, Y., Kalyta, P., LaBarge, M.[1], Li, G., Moneta, F., Robitaille, N.[1], Sartor, M., Sonmez, F., Spitzmueller, M., Thomas, T., Wang, J., Wu, S.[2], Zhang, N.

Professor Emeritus
Arnold, S., Buchan, B., Daub, M., Gallupe, R.B., Gordon, J., Johnson, L., Neave, E., Petersen, E., Taylor, H.

Adjunct Professor
Blake, R.

Adjunct Associate Professor
Bartholomew, S., Jenkin, T., Kissick, P., Mufti, S., Phelan, J., Pliniussen, J., Reid, D., Roman, P., Wright, R.

Adjunct Assistant Professor
Andrew, J., Anger, T., Bissonette, G., Boland, G., Carlson, J., Cross, B.,Detomasi, D., Dubey, S., McConomy, D., Osanic, P., Rogers, K., Rowbotham, K.

1 - Leave
2 - Sabbatical

Facilities

Goodes Hall is designed to maximize interaction between students and faculty. Two expansive atriums are the central hub of the School. Goodes Hall provides a wireless network accessible anywhere in the building with plenty of classrooms, meeting rooms and lounge areas for graduate students. Students have access to the Smith behavioural research lab, and their own dedicated computer lab with various software packages and a suite of databases available. Presentation tools can be found in classrooms including data projectors, document cameras, video capability and video conferencing facilities.

Financial Assistance

Competitive levels of financial support are available during the first four years of the doctoral program. Ph.D. students receive a minimum of $33,000 per year, for four years based on good progress in the program. In order to receive this funding, students in Years 1-4 are required to work as an RA and/or TA. Students in Year 5 are also eligible to receive up to $10,000 in funding. Students also have access to conference and research support.

Master's students receive a minimum of $20,000 in funding from Smith School of Business a portion of which is made up of RA and/or TA employment.

All applicants to the M.Sc. and Ph.D. programs whose applications are complete and accepted before March 1 are automatically considered for University fellowships. In addition, students are eligible to apply for additional funding through provincial fellowships such as the Ontario Graduate Scholarship and national fellowships such as the Social Sciences and Humanities Research Council (SSHRC) fellowships.

Research and/or teaching assistantships, as well as awards and bursaries are also available. Ph.D. students who have successfully passed their comprehensive

examination may also apply for a paid teaching position to teach an undergraduate course.

Programs of Study

Applications for the M.Sc. and Ph.D. programs are made in accordance with the general regulations of the School of Graduate Studies.

Master of Science

Queen's Master of Science in Management is a 12-month program focusing on business research in one of nine fields of study: accounting, business economics, finance, international business (*not available September 2018*), management information systems, marketing, management science, organizational behaviour, and strategy. This program provides students with an advanced-level conceptual foundation in their chosen field, and allows for the pursuit of highly-focused research.

The primary goal of the M.Sc. program is to prepare students for entry into the Smith School of Business Ph.D. program and other high-quality Ph.D. programs. Some students also choose to go into consulting careers and research analyst positions.

The program begins in September of each year, and requires three terms (12 months) of full time continuous study. There is no provision for part-time study.

Academic Qualifications for Admission

Applicants must have a minimum of a B+ average in the last 2 years of study in a four-year undergraduate degree or higher degree in a discipline that is related to their field of interest. All applicants for the master's program must complete the Graduate Management Admission Test (GMAT) or GRE tests. TOEFL or IELTS is required for applicants whose native language is not English. Admissions are competitive, and based on the candidate's background as well as the overall program size and number of students in each field. Applications are reviewed on a rolling basis from December to March.

Course Requirements

Students must complete the required coursework as outlined by each area group on the Smith School of Business, MSc website.

Course selection offerings are at the discretion of the department and may change due to faculty availability.

Relationship to the Ph.D. Program

M.Sc. graduates who are admitted to the Ph.D. program, in the same field of study, can anticipate accelerated progress toward completing their degree since they will have a graduate level foundation in their major field.

Students who have completed a Master's of Science in Management at Queen's University will normally be required to complete a minimum of four to six additional 3.0 credit unit courses.

Students who have completed a Master of Arts in Economics at Queen's University will normally be required to complete between four to six additional 3.0 credit unit courses.

Thus, the Ph.D. requires completion of between six and twelve 3.0 credit unit courses, depending on the prior academic background of the student and the area groups requirements.

In each case, the number of courses required will be at the discretion of the Associate Dean in the Smith School of Business. A normal course load is three courses per term.

Doctoral Program

The program of study leading to the Ph.D. in Management provides for a specialization in one major field (Accounting, Business Economics, Finance, International Business [*not available September 2018*], Management Information Systems, Management Science, Marketing, Organizational Behaviour and Strategy). Together with the courses in Research Methods, Quantitative Analysis and teaching, the program provides knowledge of the necessary theory and research methods to enable students to engage in high quality research and teaching. Emphasis is placed on research, initially in the form of a first-year research paper, conference presentations and submission of manuscripts to journals, and ultimately in the completion of the doctoral thesis.

Academic Qualifications for Admission

The minimum academic qualifications for admission are: a) A B+ average in a master's degree or b) A four year Bachelor Honours degree, and completion with high standing of one academic year of full-time graduate study in a program that is directly related to management studies at a recognized university. Examples of recognized related studies

include master's programs in: Business, Public Administration; Economics; Psychology; Industrial Relations; Mathematics; Operations Research or Industrial Engineering; Sociology; Statistics; Political Science; Education; Anthropology; Gender Studies, Cultural and Global Development Studies; Urban and Economic Geography; and Urban and Regional Planning with an emphasis on economics and quantitative analysis. Or c) Direct entry: consistent with the applicable regulations found here, students with unquestionably superior standing in their honours bachelor's degree, or equivalent, may be considered for direct admission to a doctoral program.

All applicants for the doctoral program must complete the Graduate Management Admission Test (GMAT) or GRE test. TOEFL or IELTS is required for applicants whose native language is not English. Admissions are competitive, and based on the candidate's background as well as the overall program size and number of students in each field. Applications are reviewed on a rolling basis from December to March.

Course Requirements

Students must complete the required coursework as outlined by each area group on the Smith School of Business, PhD Program website.

Course selection offerings are at the discretion of the department and may change due to faculty availability.

Comprehensive Examination

A comprehensive examination must be taken in the student's selected area. This examination may include a written and an oral component. Normally students are required to take this exam after course work completion in the 2nd year of studies. For complete information consult the department.

Research

The major research requirement in the program is the thesis. Students are encouraged to make an early start in developing their research interests and skills, and the program is designed to support this. Completion of a research project in the first summer in residence is an important ingredient in the evaluation of each student's performance. This research paper may form the basis of the thesis proposal. Students are also strongly encouraged to engage in additional research projects, and attendance at major conferences is encouraged and supported.

Thesis Proposal

All students are required to submit and present a thesis proposal. An acceptable proposal should demonstrate that the candidate has developed a research plan that leads to an acceptable thesis, that the candidate has a clear understanding of the problem addressed, the relevant literature and the research methodology. The intent of the proposal is to give constructive comments to the candidate and should not be construed as a contract which guarantees acceptance of the completed thesis.

Dissertation

The dissertation research must be original and contribute to knowledge in the field. The defense of the dissertation will be an oral examination conducted according to the General Regulations of the School of Graduate Studies.

Teaching

All students complete a teaching course (MGMT-993) comprised of a series of teaching workshops and practicum. An exemption may be granted based on prior coursework or teaching experience.

Program Timing

The Ph.D. program begins each year in September and normally requires four to five years of full-time study. In addition to regular course work, first year students become involved in research through a research project where they work closely with a faculty advisor to develop research skills. In the second year, students will complete course requirements and take a comprehensive examination during that year. In the third and fourth years, they will develop and defend a thesis proposal, and then complete and defend the dissertation. Each spring, all students meet with the Associate Dean to discuss program planning and submit an Annual Student Progress Report.

The program is designed so that the course work and comprehensive examination should be completed in the first two years of study. This enables the student to devote two full years to their research thesis, with the expectation that the program requirements can then be completed in a four to five year period.

MATHEMATICS AND STATISTICS

Head
Mingo, J.A.

Associate Head
Dimitrov, I.

Graduate Coordinator
Yuksel, S.

Professor
Alajaji, F., Bogoyavlenskij, O.I., Day, T., Kani, E., Levit, B., Lewis, A.D., Linder, T., Mingo, J.A., Murty, M.R.[2], Roth, M., Smith, G.G.[1], Taylor, P.D., Yui, N.

Associate Professor
Dimitrov, I., Jiang, W., Lin, C.D., Mansouri, A.-R.[1], Offin, D.C., Takahara, G.K.[1], Yuksel, S.

Assistant Professor
Barthelmé, T., Cellarosi, F., Gharesifard, B., Magpantay, F., Pfaff, C.E.; Rodgers, B.

Professor Emeritus
Thomson, D.J.

Cross-Appointed Faculty
Blohm, G., Blostein, S., Chen, B., Green, M.F., Guay, M., McLellan, P.J., Paquette, C.[3], Peng, P., Tardif, C.[3], Tu, D., Wehlau, D.L.[3], Zaguia, I.[3]

1 - On Leave July 2018-June 2019
2 - Queen's Research Chair
3 - Royal Military College

Facilities

The Department of Mathematics and Statistics is located in its own building, Jeffery Hall, and this building also houses most of the facilities associated with the department. A large number of networked public computers and workstations are located in Jeffery Hall and provide students and staff with ready access to standard computing software and to the Internet.

Financial Assistance

Graduate students are normally supported by teaching and research assistantships and research fellowships and various scholarships and awards. A student receiving a major scholarship (such as an Ontario Graduate Scholarship or a Natural Sciences and Engineering Research Council Postgraduate Scholarship) will normally be awarded additional support and also offered a teaching assistantship.

Areas of Research

Faculty research areas cover pure and applied mathematics, statistics and engineering mathematics. A summary of the current research interests of our faculty is available on the Department of Mathematics and Statistics website https://www.queensu.ca/mathstat/research.

Degree Programs

Applicants are accepted under the general regulations of the School of Graduate Studies and must fulfill departmental requirements.

Master of Science (M.Sc.)

Pattern I

The program consists of four half courses approved by the department and a Master's thesis. At least one of the courses must be taken from the department's core graduate course offerings. This program normally takes up to two years to complete.

Pattern II (Mathematics)

The program consists of seven half courses approved by the department and a research project. One of the courses must be MATH 800 and at least two courses must be selected

from the department's core graduate course offerings. This program normally takes 12 months to complete.

Pattern II (Statistics)

The program consists of seven half courses approved by the department and a research project. At least one course must be selected from the department's core graduate course offerings. This program normally takes 12 months to complete.

Qualified students may also apply to complete this program with a specialization in Biostatistics. See the details of the Collaborative M.Sc. Program in Biostatistics in this calendar.

For complete details on all masters degree programs offered by the department consult our Graduate Programmes and Guidelines.

Master of Applied Science (M.A.Sc.)

This program is directed towards engineers with a strong interest in mathematics. The program consists of a minimum of four one-term courses approved by the department and a Master's thesis. At least one course must be taken from the department's core graduate course offerings. This program normally takes up to two years to complete.

Doctor of Philosophy

Applicants are accepted under the general regulations of the School of Graduate Studies.

The program involves three stages: preparation for research (course requirements and qualifying examinations), certification that the preparation is adequate (thesis prospectus examination) and thesis research.

Course Requirements
The student, in consultation with the supervisor, must propose a selection of courses which ensures exposure to multiple branches of mathematics and/or statistics and which provides the student with a depth of knowledge commensurate with a Ph.D. holder in mathematics or statistics. This proposal will consist of a minimum of nine one term graduate courses and may include courses taken during a Master’s program at Queen’s or elsewhere. The specific courses and number of courses a student will be required to take during their doctoral studies will depend on their field of study and their background preparation to date.

Qualifying Examinations
Written examinations will assess the student's knowledge of their broad research area and also core areas of mathematics and/or statistics related to that area.

Thesis Prospectus Examination
An oral examination, based on a research proposal written by the candidate, will evaluate both the feasibility of the student's proposed research and the competence of the student to carry out that research.

For complete details on all requirements for the doctoral degree consult our Graduate Programmes and Guidelines.

MD PHD AND MD MASTER'S

The combined MD/PhD and MD/Master's programs are offered jointly by the School of Medicine and the School of Graduate Studies, with the participation of the graduate programs in Biomedical Engineering (Collaborative Program), Biomedical and Molecular Sciences, Cancer Research (Collaborative Program), Computing, Epidemiology, Neuroscience, Pathology and Molecular Medicine, and Rehabilitation Sciences.

The program admits a limited number of exceptional students who are highly motivated to pursue research as a major component of their future medical career. Graduates from the program are well prepared to pursue postdoctoral or research-intensive residency training, and as fully trained physician-scientists, will contribute to increasing Canada's capacity in basic, clinical, translational and patient-oriented research.

Program Requirements and Structure

The program combines the four year (9 term) Undergraduate Medical Program with an 11 term (PhD) or 5 term (Master's) period of full-time enrolment in one of the participating graduate programs. Students applying to the combined program will have met the admissions requirements and will have been accepted into both the MD program and the chosen graduate program. Students usually enter the combined program in the year of acceptance to medical school, although students in upper years of the MD program at Queen's University are also eligible to apply, provided they are accepted into one of the participating graduate programs.

The combined programs are designed such that students will complete the MD/PhD and MD/Master's programs in 7-7.5 and 5 years, respectively. Students will complete all course requirements of the Undergraduate MD Program, the course and thesis requirements of the particular graduate program in which they are enrolled, the PhD comprehensive exam, if applicable, and any other requirements of the particular graduate program.

In the MD/ Master's program, students complete the first two years of the MD program followed by a full year of full-time enrolment in the chosen graduate program, in which they fulfill course requirements, conduct research and write and defend the thesis. Students are also enrolled full time in the graduate program over the summer months

of the first two medical years. Following completion of the Master's degree, students enter years three and four of the MD program.

In the MD/PhD program, students spend the first two years in the PhD program, in which they complete course requirements (if any), complete the PhD comprehensive exam, and conduct research. Students then enter the first two years of the MD program, continuing their research over the summer months. Following year two of the MD program, students re-enter the PhD program for a final year, in which they complete the thesis research, and write and defend the thesis. Although this is the normal path through the first five years of the program, alternative routes can be considered, subject to approval by the MD/PhD-MD/Master's Committee, if a strong case can be made by the student and PhD supervisor. Following completion of the PhD degree, students enter years three and four of the MD program. It is expected that students will complete the graduate degree within the time frame outlined above. However, it is recognized that some students in the MD/PhD program may require an additional year of graduate studies to complete the PhD portion of the combined degree program.

Eligibility

Students applying to the combined programs will have met the admissions requirements and will have been accepted into both the MD program and the chosen graduate program. The minimum requirement for the MD/PhD or MD/Master's Programs at Queen's University is an Honours baccalaureate degree. Students with a Master's degree, graduate students in the second year of a Master's program, or students currently registered in the MD program at Queen's University are also eligible to apply. Students registered in a Master's program at the time of application must complete the requirements for the Master's degree prior to entry into the combined MD/PhD program, unless promoted to the PhD program through the Mini-Master's route (Queen's students only). Applicants must have an obvious and demonstrated research potential.

Financial Assistance

During the period of funding eligible full-time graduate study (maximum of 6 terms for Master's, 12 terms for PhD), Master's and PhD students will receive at least the minimum guaranteed stipend for the graduate program in which they are enrolled. Primary sources for funding packages include Teaching Assistantships, Research Assistantships and Queen's Graduate Award funding. Secondary sources include internal and external competitive awards. During the period of study in the MD

program, a stipend of $25,000 per year will be provided for MD/PhD students and $15,000 per year for MD/Master's students (first two years of MD program).

MECHANICAL AND MATERIALS ENGINEERING

Head
Pilkey, A.K..

Coordinator of Graduate Studies
Ciccarelli, G.

M.Eng. Coordinator
Matovic, M.D.

Professor
Anderson, R.J., Birk, A.M., Ciccarelli, G., Daymond, M., Deluzio, K., Harrison, S.J., Jeswiet, J., Mechefske, C., Notash, L., Pharoah, J.G., Pilkey, A.K., Piomelli, U., Strong, D.S., Surgenor, B.W.

Associate Professor
Diak, B., , Kim, I.-Y., Lai, Y., Li, Q., Rival, D.E., Sellens, R.W., Yao, Z., Zak, G.

Assistant Professor
Balogh, L., Béland, L.K., Davies, T.C., Fallah, V., Matovic, M.D., Persaud, S., Rainbow, M.J.

Professor Emeritus
Boyd, J.D., Bryant, J.T., Cameron, J., Dumas, G.A., Holt, R., McGeachy, J.D., Mulvenna, C., Oosthuizen, P.H., Pollard, A., Saimoto, S., Smith, R.W., Wyss, U.P.

Cross-Appointed
Barz, D.P.J., Bicknell, R., Daneshmend, L.K., Ellis, R.E., Fichtinger, G., Giacomin, A.J., Marshall, J., Peppley, B., Pichora, D., Strong, D., Wowk, D., Wu, X.

Departmental Facilities

The facilities are subject to frequent review to meet the requirements of the department's commitment to teaching and research. A range of computing facilities is available for laboratory and course work use. A large shop contains advanced machining and welding equipment for instruction and apparatus construction.

Financial Assistance

The Department attempts to ensure that students have sufficient financial support from scholarships, teaching and research assistantships to cover fees and minimum living expenses.

Holders of major scholarships or fellowships are usually encouraged by the donor and by the Department to obtain teaching experience, and thus augment their income with teaching assistantships.

Fields of Research

The Department of Mechanical and Materials Engineering has concentrated its research in four fields which are recognized by the Engineering Profession as components of Mechanical Engineering: Biomechanical Engineering, Energy and Fluid Systems, Manufacturing and Dynamic Systems, and Materials Engineering.

Materials Science and Technology

The Department cooperates with the Departments of Chemical Engineering, Chemistry, Electrical and Computer Engineering, and Physics, Engineering Physics and Astronomy, in offering courses and research projects to students wishing to concentrate in materials science and technology. Students are registered for M.A.Sc. and Ph.D. degrees in one of the five departments and are encouraged to take relevant courses from the others.

Programs of Study

Applicants are accepted under the general regulations of the School of Graduate Studies.

Master of Applied Science (M.A.Sc.)

The minimum requirements for the M.A.Sc. are four term-length graduate courses or their equivalent plus a satisfactory thesis successfully defended. One term length senior (400-series) undergraduate course may be accepted as the equivalent of a graduate course from any discipline for an M.A.Sc. student provided that

a. the course is approved by the student's supervisor and

b. the student has not received credit for a similar course in their Bachelor's program.

Master of Engineering (M.ENG.)

The requirements for the M.Eng. are 8 term length courses. At least 4 term length courses must be taken from the department in which the student is registered and be entered as primary on the registration form. A maximum of 2 term length 400 series courses may be taken provided that

a. the courses are approved by the student's supervisor or graduate coordinator and
b. the student has not received credit for similar courses in their Bachelor's program.

Doctor of Philosophy

The minimum requirements, beyond the Master's Degree, are a minimum of four term length graduate level courses (or equivalent) plus a satisfactory thesis, successfully defended.

Seminars

As part of the M.A.Sc. and Ph.D. programs, full-time students are required to take the appropriate seminar course, either MECH-897 or MECH-997.

ADMI Master of Engineering (ADMI M.Eng.)

The ADMI Master of Engineering program (ADMI M.Eng.) is offered through a partnership between Queen's University and Western University, and is designed for working engineering graduates. It is a coursework M.Eng. degree. Each course in the program is composed of two weekend modules and each course is approximately 36 hours of in-class time spent on lectures, discussion and application work. The ADMI M.Eng. program requires participants to dedicate a total of four full days of focused in-class participation in each course, as well as complete take-home assignments.

For details visit the ADMI website at www.admicanada.ca.

UNENE Program (University Network of Excellence in Nuclear Engineering)

The UNENE program is a graduate studies program approved by the Ontario Council of Graduate Studies. It is a joint course-based Master's of Engineering program in Nuclear Engineering offered by McMaster, Waterloo, Western and Queen's universities. Students can register for a variety of courses in areas fundamental to nuclear power plant design, operation and safety and the technologies of industries which use nuclear techniques. The program provides an overview of the fundamentals in many nuclear topic areas. To register for UNENE courses a student must be registered as a graduate student at one of the participating UNENE universities. The UNENE program is presented by these universities and other Ontario and Canadian universities that participate by providing courses and instructors. A graduate student registered in a UNENE university is eligible to take all the courses in the UNENE program and be credited for them at the university where the student is registered. The requirement for a Master's of Engineering degree is ten UNENE courses or eight courses and an industrial project.

GRADUATE DIPLOMA IN MEDICAL SCIENCES AND THE PROFESSIONAL MASTER OF MEDICAL SCIENCES

Overview

The Department of Biomedical and Molecular Sciences (DBMS), Postgraduate Medical Education (PGME), and Undergraduate Medical Education (UGME), in the Faculty of Health Sciences, have developed a partnership to deliver two new and unique programs: the Graduate Diploma in Medical Sciences (GDip) and the Professional Master of Medical Sciences (PMMSC). The programs are designed to enhance students' clinical and research skills to align with the requirements of the Canadian Residency Matching Service (CaRMS) process and to promote research and scholarship activities in future physicians. The programs will provide bridging opportunities for Canadian Medical Graduates (CMG) who have yet to secure a residency position, and International Medical Graduates (IMG) who seek experience in Canadian contexts, which is especially important given the growing number of Canadian students Studying medicine Abroad. (CSAs).

Admission and Application Requirements

To be considered for admission to both the Graduate Diploma in Medical Sciences and the Professional Master of Medical Sciences, admission requirements will include the following:

- An MD or equivalent from a medical school on the International Medical Education Directory (IMED);
- Graduation with a B- graduating average or higher (70% graduating average or a ranking in the top third of the graduating class where number grades are not available);
- A Personal Statement will be required in order to ensure alignment of the applicant's background and career aspirations with the objectives of the program;
- A Curriculum Vitae;
- Two references from individuals familiar with the candidates academic performance;
- Medical Student Performance Record or Dean's Letter;

- In cases where English is not the first language, nor was the language of instruction in medical school, applicants are required to submit TOEFL or IELTSscores
- National Assessment Collaboration examination score report (exempt for applicants who hold an MD from a Canadian university).

After review of the complete application, competitive candidates will be invited for an interview.

For those who successfully complete the Graduate Diploma and wish to apply for the Professional Master of Medical Sciences, applicants must obtain at least a B- in all courses in their Graduate Diploma program and apply for the Professional Master within five years after completing the Graduate Diploma.

Programs Structures and Requirements

Students may start the Graduate Diploma in Medical Sciences in either January or July, and complete the program within 6 months. Students in the Graduate Diploma program may elect to apply for the Professional Master of Medical Sciences. The Professional Master's program requires Graduate Diploma in Medical Sciences graduates to take MSCI-802 and MSCI-898, which require another 6 months to complete.

Applicants can also apply for direct entry into the Professional Master of Medical Sciences beginning in either January or July.

The Graduate Diploma in Medical Sciences may be used to ladder into other MSc programs in the Faculty of Health Sciences. For students who complete the Professional Master of Medical Sciences and wish to pursue further training in research, they may opt to apply for one of the PhD programs offered in the Faculty of Health Sciences.

The Graduate Diploma in Medical Sciences consists of one core course and one elective course each accounting for 3.0 credit units, and one 6.0 credit unit Integrated Graduate Clerkship (I) course. The two graduate courses include a required Research Methodology course and an elective course chosen from the approved list of graduate courses, and can be based on the individual student's interest or background.

In addition to the three courses required for the Graduate Diploma, the Professional Master of Medical Sciences also requires two 6.0 credit unit courses: a second Integrated Graduate Clerkship (II) course and Research Project in Medical Sciences. Students are

expected to complete the Professional Master with an additional six months if they ladder from the Graduate Diploma, for a total of one year.

Students' progress will be reviewed and monitored by the curriculum committee. Performance in graduate clerkship and in research projects will be overseen by clinical academic advisors and faculty advisors, respectively.

Core Courses

- MSCI-800* Research Methodology (3.0 credit units)
- MSCI-801 Integrated Graduate Clerkship I (6.0 credit units)
- MSCI-802 Integrated Graduate Clerkship II (6.0 credit units) (Professional Master of Medical Sciences only
- MSCI-898 Research Project in Medical Sciences (6.0 credit units) (Professional Master of Medical Sciences only)

Elective Courses

All courses lists are 3.0 credit units. Not all courses are offered every year.

- BMED-812* Advanced Neuroanatomy
- BMED-853* Cellular and Molecular Cardiovascular Disease
- NSCI-829* Disorders of the Nervous System
- NSCI-844* Controversies in Neuroscience
- EPID-801* Introduction to Epidemiology
- EPID-812* Program Evaluation
- PATH-822* Experimental Cancer Therapeutics
- PATH-823* Cancer Biology

Other graduate-level courses could be approved as elective courses by the curriculum committee.

MICROBIOLOGY AND IMMUNOLOGY

CHANGES TO THIS PROGRAM, AS OF SEPTEMBER 2014:

Effective September 2014, the graduate programs in Microbiology and Immunology become part of the Department of Biomedical and Molecular Sciences. There is no new admission to Microbiology and Immunology effective September 2014.

Graduate students registered in Microbiology and Immunology prior to September 2014 would normally be expected to follow the programs of study and degree requirements listed below.

For more information, go to: Department of Biomedical and Molecular Sciences section of this calendar.

Programs of Study

Applicants are accepted under the general regulations of the School of Graduate Studies into either Master of Science or Doctor of Philosophy degrees. Both programs consist of research and preparation of a thesis, the field of research to be chosen in consultation with the supervisor. Course work depends upon the experience and field of interest of the students.

MINING ENGINEERING

Head
Katsabanis, P.D.

Coordinator of Graduate Studies
Ortiz , J.[3]

Professor
Daneshmend, L.K.[2], Kelebek, S., McKinnon, S.D.[1], Pickles, C.A.

Associate Professor
De Souza, E.M., Katsabanis, P.D., Marshall, J.

Assistant Professor
Ghahreman, A., Johnson, E.A.

Adjuncts
Davis, B., Doggett, M., Hodge, R.A., Kalenchuk, K., McIsaac, G., Peacey, J., Peck, J.P.

Emeritus Professor
Archibald, J.F.

1 - Chair in Mine Design
2 - Noranda-Falconbridge Chair in Mine-Mechanical Engineering
3 - Stollery Professor in Mining Engineering and Geological Sciences and Geological Engineering

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About the Program

The Robert M. Buchan Department of Mining at Queen's has prepared global mining industry leaders for more than 120 years. It is today not only the largest mining department in Canada but among the largest in the world. In fact, Queen's mining engineers account for some 33 percent of all Canadian mining and mineral processing engineers who have graduated from Canadian universities.

As technology evolves and the global economy changes, our students and researchers play a key role in defining the state of the art in mining. In close collaboration with

industry partners, our faculty and students work to make mining operations safer, more efficient, more productive, less impactful on the natural environment, and more cost effective.

Mining has close relationships with Mechanical and Geological Engineering through cross appointments of the Chair in Mine Mechanical Engineering and the Stollery Professorship in Mining and Geology. Graduate students benefit from courses in these departments, as well as courses in Civil and Chemical Engineering and Geography.The Department offers the degrees of Master of Applied Science (M.A.Sc.), Master of Engineering (M.Eng.) and Doctor of Philosophy (Ph.D.) with specializations in Mining Engineering and Mineral Extraction.

An engineering degree from The Robert M. Buchan Department of Mining at Queen's, with its excellent recognition internationally, equips graduates to become highly employable in the mining industry not only in Canada but worldwide.

Areas of Research

Faculty Member	Research Areas
Laeeque Daneshmend	Machine Design, Equipment Maintenance, Maintenance Management, Reliability Analysis, Systems Modeling, Simulation and Control, Mining Automation, Telerobotics.
Euler DeSouza	Mine Ventilation, Mine Environment, Instrumentation, Backfill.
Ahmad Ghahreman	Hydrometallurgy and Biohydrometallurgy, Mineral Processing Wastes and their Remediation, Electrochemical Dissolution of Complex Minerals (fundamental studies), Flowsheet Design and Modeling.
Anne	Management of Social Risk,

Johnson	Sustainability Reporting and Metrics, Mining Law and Policy, Community Relations
Takis Katsabanis	Detonation Physics, Blasting, Fragmentation, Vibration.
Sadan Kelebek	Mineral Processing Technology, Process & Tailings Environment, Computer Assisted Process Analysis, Complex Sulphides and Pyrrhotite Rejection.
Joshua Marshall	Mining Systems, Field Robotics, and Automation. Development and Application of Methods for Perception, Modelling, Analysis and Control of Mining Equipment and Processes.
Steve McKinnon	Stress Fields in Complex Geological Environments, Mine Design in High Stress Conditions, Mining Induced Seismicity, and Geodynamics Modeling of the Earth's Crust.
Julian Ortiz	Geostatistics, Stochastic Modeling of Ore Deposits, Sampling and QA QC, Geometallurgical Modelling.
Chris Pickles	Processes and the Environment, Advanced Pyrometallurgy, Process Engineering for Metals Extraction, Advanced Metals Extraction.

Departmental Facilities

The Robert M. Buchan Department of Mining is located in Goodwin Hall, which provides lecture, laboratory and study facilities. The on-campus laboratories include a Rock Mechanics laboratory, Mine Environment laboratory, Computer Planning facilities, and several Mineral Processing laboratories. The department also operates an Explosive Test Site in Hinchinbrooke Township, near Kingston. Laboratories are fully

equipped for the programs offered. In addition, they include extensive equipment for advanced study and research in the various fields of major interest. The facilities allow undergraduate courses to be conducted in close proximity to graduate study and research. As a result, sound professional practice can be emphasized while the potential for future development is demonstrated.

Programs of Study

Applicants are accepted under the general regulations of the School of Graduate Studies. Applications to the M.Eng., M.A.Sc. and Ph.D. programs from other related engineering and science programs are encouraged. These would include, Mechanical Engineering, Geological Engineering, Civil Engineering and Physics programs for mining projects and Metallurgical Engineering, Chemical Engineering and Chemistry programs for mineral processing projects.

Master's Degrees

Master of Engineering (M.Eng.)

The requirement for completion of the M.Eng. degree is eight (8) term length courses. Two of the courses can be at the 400 undergraduate level. Students are eligible to take any relevant courses listed in the Graduate Calendar, as long as at least four (4) of the courses are taken from their home department. Students generally take a set of courses that fit their background and interest.

In Mining Engineering, students have the option to take MINE-898*, a project-based course that counts as one course towards the required eight courses total.

All students must take CHEM-801*, a non-credit course in laboratory safety, at the first opportunity after their initial registration. Students who have previously completed MINE-462 or MINE-862 as part of their regular undergraduate or graduate programs at Queen's University, are exempt from this requirement.

Master of Applied Science (M.A.Sc.)

The minimum requirements for the M.A.Sc. are four (4)term length courses, satisfactory participation in the graduate seminar (MINE-897) and completion of a research thesis (MINE-899). Normally, two courses will be taken within and two courses will be taken outside the Mining Department. The department may make exceptions to this academic requirement if a different balance of mining and external courses is beneficial to the

student and has the support of the supervisor. One term length course can be from the 400-series in another department, or, under exceptional circumstances, from Mining, but this course must be selected according to applicable regulations.

All students must take CHEM-801*, a non-credit course in laboratory safety, at the first opportunity after their initial registration. Students who have previously completed MINE-462 or MINE-862 as part of their regular undergraduate or graduate programs at Queen's University, are exempt from this requirement.

Doctor of Philosophy

The minimum academic requirements are four term length courses beyond the M.A.Sc. degree, satisfactory participation in the graduate seminar MINE-897, successful completion of the comprehensive examination requirement, and completion of a research thesis (MINE-999). All courses must be taken at the graduate level. Normally, three courses will be taken within and one course will be taken outside the Mining Department. The department may make exceptions to this academic requirement if a different balance of mining and external courses is beneficial to the student and has the support of the supervisor. In certain cases, the number of courses required will be larger than the minimum. The selected academic program must be approved by the Department.

All students must take CHEM-801*, a non-credit course in laboratory safety, at the first opportunity after their initial registration. Students who have previously completed MINE-462 or MINE-862 as part of their regular undergraduate or graduate programs at Queen's University, are exempt from this requirement.

The comprehensive examination, an assessment of the student's understanding of the major areas of Mining Engineering, must be taken by all Ph.D. candidates and may, under special entrance requirements, be required to be taken in two parts.

Should an entering Ph.D. student's background in mining engineering or related disciplines be deemed to be insufficient, a designated program of study and/or completion of general knowledge examinations (first level comprehensive examination) will be required to be taken. The first level comprehensive examination will review the candidate's general background in Mining Engineering and must be held in the fall term of the second year of the Ph.D. program.

If a first level knowledge examination is not required, the Ph.D. student will be required to complete a comprehensive examination leading up to a final thesis defense that will

cover the area of specialization and areas of the candidate's background preparation. This examination should be taken at least 18 months after a student's initial registration in the Ph.D. program and no later than 12 months prior to the final thesis defense.

Funding

A minimum funding guarantee for eligible students at the Master's level of $16,800 and at the Ph.D. level of $18,000 per year is available. M.Eng students are self-funded.

Teaching Assistantships may be offered to students throughout the academic year.

Registered full-time students who are in good academic standing with Queen's are eligible for a wide range of internal and external scholarship and bursary awards.

Social Performance Management in the Extractive Industries

The term "social performance" is preferred because it acknowledges industry reality. The term captures both accountability and the suite of approaches to community relations that must be effected by companies whose activities have the potential to disrupt communities. Going beyond "community relations," social performance describes a rigorous and methodical approach to community relations that is accountability focused: on negotiated definition of outcomes, development of mutually-agreed methods for dispute resolution, and on verification of outcomes satisfactory to all stakeholders.

Program Details
The SPMEI Graduate Diploma consists of four courses, delivered in an online and asynchronous format. The program may be completed on a part-time basis over two or four 12 week terms, and courses may be applied towards completion of M.Eng. or M.A.Sc. degrees.*

The Diploma consists of 4 core courses: MINE-800, MINE-801, MINE-803, and MINE-804.

Admission
Admission requirements for students entering the Diploma program will include:

- A baccalaureate degree from a recognized university;
- B- graduating average or higher (70% graduating average or a ranking in the top third of the graduating class where number grades are not available);

- Under exceptional circumstances, consideration will be given to highly motivated individuals with relevant field experience who do not meet the B-requirement; and
- A statement of interest in the program will be required in order to ensure alignment of the applicant's academic background, work experience, and career aspirations with the objectives of the program.

Although an Engineering degree is not required, relevant work experience in the area of Mining or other Extractive industries is essential.

For more information, contact the Mining Graduate Assistant to indicate interest.

NEUROSCIENCE

Director
Munoz, D.P.

Coordinator of Graduate Studies
Reynolds, J.N.

Faculty
Andrew, R.D., Arboleda-Florez, J.E., Bendena, W., Beninger, R.J., Blohm, G., Brien, J.F., Brouwer, B., Brunet, D., Cahill, C.M., Castelhano, Dorris, M.C., Dow, K., Dringenberg, H.C., Dumont, E., Ferguson, A.V., Flanagan, J.R., Flavin, M.P., Forster-Gibson, C., Garcia, A., Gilron, I., Glasgow, J.I., Hawryshyn, C., Holden, J.A., Hollenstein, T., Johnsrude, I., Kawaja, M.D., Kelley, E., Kuhlmeier, V.A., Lederman, S.J., LePage-Partenteau, Lomax, A., Magoski, N.S., Marin, A., McLean, L., Melanson, M., Menard, J., Milev, R., Munhall, K.G., Munoz, D.P., Norman, K., Olmstead, M.C., Ouellette-Kuntz, H., Oyewumi, K.L., Paré, M., Pari, G., Pelland, L., Pukall, C., Reynolds, J.N., Robertson, R.M., Rose, P.K., Rossiter, J.P., Sabbagh, M., Scott, D., Scott, S.H., Singh, A.N., Smith, G., Spiller, A., Stroman, P., Ten Hove, M., Troje, N., Van Vugt, D.A., Vertegaal, R.P.H., Wilson, D., Wynne-Edwards, K.

Retired Members of Faculty
Boegman, R., Frost, B., Jhamandas, K., Lawson, S., Weisman, R.

Facilities

The Centre for Neuroscience Studies is an interdisciplinary center with a membership that includes faculty members from multiple departments in both the Faculty of Health Sciences and the Faculty of Arts & Science. The graduate program in Neuroscience provides an enriched environment for the training of highly qualified personnel with the skills required to study fundamental questions of function and diseases of the nervous system. Faculty members participating in the graduate program in Neuroscience have access to world-class laboratory facilities applicable to all aspects of neuroscience research.

Graduate Student Support

Scholarships, fellowships and stipends from supervisors' research grants are available to graduate students. It is the policy of The Centre for Neuroscience Studies that a minimum level of assistance is available to each graduate student. Details regarding the current level of support available to graduate students in the program are available from the Centre's graduate office and from the Centre for Neuroscience Studies web page at www.queensu.ca/neurosci/.

Fields of Research

The fields of specialization within the graduate program in Neuroscience are: Cellular/Molecular Neuroscience; Systems Neuroscience; Cognitive/Behavioural Neuroscience; and Neurological/Psychiatric Conditions.

Degree Programs

Master of Science and Doctor of Philosophy

Applicants for the degrees of Master of Science and Doctor of Philosophy are accepted under the general regulations of the School of Graduate Studies.

NURSING

Director
Medves, J.

Associate Director (Graduate Nursing Programs)
Almost, J.

Professor
Medves, J., Tranmer, J., VanDenKerkhof, E.

Associate Professor
Almost, J., Edge, D., Godfrey, C.[1], Pulling,C., Sears, K., Tregunno, D.,Wilson, R., Woo, K.Y.

Assistant Professor
Camargo Plazas, M., Duhn, L., Goldie, C., Luctkar-Flude, M., Sawhney, M.

Professor Emeritus
Baker, C., Baumgart, A.J., Burke, S., Harrison, M., Kisilevsky, B., Lamb, M.

Lecturer
Gedcke-Kerr, L.

Cross-Appointed
Duffin, J.M.

1 - On sabbatical January 2018 - December 2018

School Facilities

The School of Nursing is housed at 82 and 92 Barrie Street where graduate students are provided with shared office space and unlimited wireless computer access. Three Nursing Laboratories include spaces dedicated to video work, clinical simulation and small meetings. Research facilities for various funded studies are available in the School, at other sites on the Queen's campus, and at affiliated health care agencies. The Glaxo-Wellcome Clinical Learning Centre is equipped with one-way windows, video systems and adjacent observation rooms.

The settings for the observations and interventions in most thesis research vary, including inpatient units, ambulatory clinics or community settings. Nursing Research is undertaken at a variety of affiliated Health Care facilities and organizations in Eastern Ontario. These include acute and long-term care hospitals, ambulatory care, primary care, and community health facilities.

Financial Assistance

Master of Nursing Science (M.N.Sc.) Program

Financial assistance is available to thesis graduate students from sources internal and external to Queen's University during their two years of full-time study. Most first year M.N.Sc. thesis students receive internal monies. Second year students are expected to apply for federal, provincial and foundation fellowships, grants and awards for which they are eligible. Those who have applied for external fellowships such as Ontario Graduate Scholarship, CIHR, or SSHRC are considered for Queen's Fellowships without further application. All M.N.Sc. students may work as research assistants for grants held by faculty members. They may also work as teaching assistants for the School of Nursing. Research Assistantships and Teaching Assistantships are limited to 10 hours per week. Information about financial assistance is available from the School of Nursing.

Doctor of Philosophy (Ph.D.) Program

Financial assistance is available to Ph.D. students from sources internal and external to Queen's University. Those who have applied for external fellowships such as Ontario Graduate Scholarship, CIHR, or SSHRC are also considered for Queen's Fellowships. Graduate Students may work as research assistants for grants held by faculty members. They may also work as teaching assistants for the School of Nursing. Research Assistantships and Teaching Assistantships are limited to 10 hours per week. Information about financial assistance is available from the School of Nursing.

Programs of Study

Master of Nursing Science (M.N.Sc.) Program and Field

Applicants to the M.N.Sc. Program

Admission requirements are:

- Graduation with a minimum of a second class standing (overall average equivalent to B) from an baccalaureate program in nursing that has been approved by the provincial/territorial authority;
- Registration (or eligible to register) as a Registered Nurse with the College of Nurses of Ontario;
- Undergraduate courses in research methodology and statistics;
- Two academic letters of reference; and
- Curriculum vitae (resume)

A statement of research interest is requested to match student interests with faculty research programs to assign thesis supervision.

International Applicants

International applicants must be graduates of a baccalaureate program in nursing that is equivalent to a four year Canadian program and have a minimum of a second class standing (overall average equivalent of B). Applicants must provide proof of registration as a nurse in their own country, but will not be required to register with the College of Nurses of Ontario. Please note that international students who are not registered in Ontario will be unable to provide direct patient care or conduct thesis research that requires registration. The applicant and potential thesis supervisors should discuss this limitation on thesis research topics during the matching process.

The Program

The M.N.Sc. is a two-year program that focuses on nursing research. The program is built on a foundation of nursing theory and clinical expertise. Typically, required course work is completed in year one with classes held on 2 consecutive weekdays. Thesis work begins in year one and is the primary focus of year two. This is a unique approach, as other nursing graduate programs focus on advanced clinical practice or a combination of advanced practice and research. Nursing research is operationally defined as the scientific investigation of health, health promotion, illness and care-related questions and hypotheses of interest to nursing. It includes the identification of factors influencing nursing care decisions and testing the effectiveness of nursing interventions on patient outcomes. The graduate of this research-intensive master's program will have:

i. the theoretical knowledge and skills to conduct small nursing research projects and participate on research teams;

ii. an area of expertise as well as the knowledge and skill to introduce and use their own and published research findings; and,
iii. critical appraisal skills needed for developing the scientific basis for nursing practice.

There are two fields of study offered: chronic health conditions, and transitions in health and illness. The program provides course work in research methods and skills, nursing theories and the conceptualization of nursing research. Theoretical and empirical analysis and conclusions on special topics of critical concern to the student's clinical field are integral to course and thesis work.

The M.N.Sc. requires 5 half courses plus, a thesis. The course work is as follows:

Foundation Courses (Required)

- NURS-800* Intermediate Statistics and Analysis
- NURS-802* Qualitative Methodology & Methods
- NURS-803* Intermediate Quantitative Research Design
- NURS-811* Theoretical Bases of Nursing Research

Special Topics (One of these half courses is required. Some years only one of these courses may be offered)

- NURS-805* Nursing, Health Services & Public Policy in Canada
- NURS-822* Nursing Research in Women's & Children's Health Issues
- NURS-832* Nursing Research for Complex Chronic Health Conditions
- NURS-833* Nursing Research for Persons at Risk for Mental Health Conditions
- NURS-862* Health Care Management Systems

Optional Electives

- NURS-801* Topics in Nursing Research
- NURS-892* Independent Study

Research (Required)

- NURS-899 Master's Thesis Research

**Denotes half courses (3.0 credits).*

Students whose research is closely linked to other disciplines, such as basic, behavioural, or social sciences, may be advised or may wish to complement core nursing courses with courses in the relevant discipline.

Master of Nursing (Primary Health Care Nurse Practitioner) (M.N.[PHCNP]) Program (non-thesis)

Applicants to the M.N.(PHCNP) Program

Admission requirements are:

- Graduation with a minimum of a second class standing (overall average equivalent to B) from an baccalaureate program in nursing that has been approved by a provincial/territorial authority;
- Active registration as a Registered Nurse with the College of Nurses of Ontario;
- Undergraduate courses in research methodology and statistics;
- Two academic letters of reference; and
- Curriculum vitae (resume).

In addition to the above admission requirements,

- Applicants to the program must have the equivalent of two years of relevant full-time practice as a Registered Nurse within the past five years (minimum of 3640 hours). As such, all applicants must have their employer(s) complete a "Verification of Employment Hours" form.
- In addition to 2 academic references, 1 clinical reference is required
- Applicants must complete and submit the Nurse Practitioner Personal Essay form.

Applicants with advanced academic credentials may be considered for advanced standing.

International applicants cannot apply to this program unless they have active registration as a Registered Nurse with the College of Nurses of Ontario and are a resident in Ontario.

The Program

The M.N.(PHCNP) program is a two-year full-time program. The program provides opportunities for students to examine theory and research relevant to primary health care health care nursing, enhance knowledge and skills in critical analysis/synthesis of

evidence and professional leadership and develop advanced skills and knowledge in health assessment for clinical nursing roles in primary health care settings. The graduates of the program will:

- possess knowledge of the theoretical and philosophical underpinnings of the discipline;
- be able to contribute to nursing research projects
- gain critical appraisal skills required to evaluate and synthesize the scientific evidence for practice in a primary health care settings; and,
- be able to undertake leadership roles in primary health care.

The M.N.(PHCNP) program consist of the following coursework:

- NURS-800* Intermediate Statistics and Analysis
- NURS-802* Qualitative Methodology & Methods
- NURS-803* Intermediate Quantitative Research Design
- NURS-811* Theoretical Bases of Nursing Research
- NURS-898 Project in Evidence Based Practice

The following seven courses are delivered via a consortium of nine Ontario universities:

- NURS-850* Pathophysiology for Nurse Practitioners
- NURS-853* Primary Health Care NP Roles and Responsibilities
- NURS-856* Advanced Health Assessment and Diagnosis I
- NURS-857*Advanced Health Assessment and Diagnosis II
- NURS-858* Therapeutics in Primary Health Care I
- NURS-859*Therapeutics in Primary Health Care II
- NURS-854 Integrative Practicum in Primary Health Care[1]

**Denotes half courses (3.0 credits).*

1 - NURS-854 is a 12 credit course, to be completed in one term, normally Summer term.

Primary Health Care Nurse Practitioner (PHCNP) Diploma

Applicants to the PHCNP Diploma Program

Admission requirements are:

- Completion of a baccalaureate degree in nursing and a Master's degree (nursing preferred) that have both been approved by a provincial/territorial authority;
- Graduation with a minimum overall average equivalent to B calculated over the core courses in both programs (Master's and undergraduate degree);
- Active registration as a Registered Nurse with the College of Nurses of Ontario;
- Two academic letters of reference; and
- Curriculum vitae (resume).

In addition to the above admission requirements:

- Applicants to the program must have the equivalent of two years of relevant full-time practice as a Registered Nurse within the past five years (minimum of 3640 hours). As such, all applicants must have their employers complete a "Verification of Employment Hours" form.
- In addition to 2 academic references, 1 clinical reference is required.
- Applicants must complete and submit the Nurse Practitioner Personal Essay form.

The Program

The Primary Health Care Nurse Practitioner (PHCNP) diploma is a post-masters program designed for those who have an undergraduate nursing degree and have already completed a master's degree. It consists of the following seven courses offered by the nine Ontario University Consortium:

- NURS-850* Pathophysiology for Nurse Practitioners
- NURS-853* Primary Health Care NP Roles and Responsibilities
- NURS-856* Advanced Health Assessment and Diagnosis I
- NURS-857* Advanced Health Assessment and Diagnosis II
- NURS-858* Therapeutics in Primary Health Care I
- NURS-859* Therapeutics in Primary Health Care II
- NURS-854 Integrative Practicum in Primary Health Care[1]

**Denotes half courses (3.0 credits)*

1 - NURS-854 is a 12- credit course, to be completed in one term, normally Summer term.

Graduate Diploma in Pain Care (GDipPainCare)

Applicants to the GDipPainCare Program

Admission requirements are:

- Graduation with a minimum of a second class standing (overall average equivalent to B) from an accredited, baccalaureate-granting University;
- A baccalaureate or Master's degree in a healthcare profession;
- A statement of interest in the program is requested to match the applicant's academic and work background with the objectives of the program;
- Curriculum vitae; and
- 2 references: 1 academic and 1 professional.

The Program

The Graduate Diploma in Pain Care program (GDipPainCare) is an eight month, part-time blended program. The objective of the program is to prepare practicing health care professionals with a comprehensive understanding of pain and the care of individuals with pain. This knowledge and skill will be achieved through a combination of online course work and clinical practice in the simulation laboratory.

The specific program objectives are to prepare graduates who will:

1. Have an advanced understanding of the pathophysiology of pain that will be applied to interprofessional care of individuals with pain;
2. Have a comprehensive understanding of the burden and impact of pain in Canada;
3. Employ and facilitate the use by colleagues of validated pain measurement strategies to assess pain;
4. Comprehensively assess pain by systematically examining biopsychosocial aspects of pain;
5. Aid individuals and families to understand and manage pain by integrating a biopsychosocial model into the treatment of pain;
6. Engage in program evaluation to monitor and improve pain care; and,
7. Assume leadership roles in their organizations to support best practices in pain care.

The GDipPainCare program consists of the following coursework (all courses except PAIN-874* are online courses):

- PAIN-870* Pathophysiology of Pain
- PAIN-871* Assessment and Treatment of Pain I
- PAIN-872* Assessment and Treatment of Pain II

- PAIN-873* Evaluating Pain Related Programs and Services
- PAIN-874* Integrated Approach to Pain Care (1-week on-site course)

*Denotes half courses (3.0 credits).

Doctor of Philosophy (Ph.D.)

Applicants to the Ph.D. program

Admission requirements are:

- a Master's degree in Nursing Science or equivalent master's degree from a recognized university, with a minimum overall average equivalent to B+ calculated over the core courses of the program;
- Undergraduate university degree in nursing; and
- Two academic letters of reference.

A statement of academic, research and professional plans is requested to match student with faculty interests. Applicants must also include a separate curriculum vitae with the application.

Applicants without an undergraduate university degree in nursing will be considered on an individual basis, and are strongly encouraged to contact the School of Nursing to discuss this opportunity prior to applying.

International Applicants
International applicants must be graduates of a baccalaureate program in nursing that is equivalent to a four year Canadian program and have a minimum of a second class standing (minimum overall average of B+). Applicants must provide proof of registration as a nurse in their own country, but will not be required to register with the College of Nurses of Ontario. Please note that international students who are not registered in Ontario will be unable to provide direct patient care or conduct thesis research that requires registration. The applicant and potential thesis supervisors should discuss this limitation on thesis research topics during the matching process.

The Program
The Ph.D. program will normally involve four years of full-time study. The program has one field, Transitions in health and illness. This field is concerned with the nature, impact, outcome, and management of the following types of health and illness related transitions: developmental transitions such as birth, death, and the passage to old age;

illness transitions such as the passage to chronic illness or the experience of a health crisis; and transitions through the health care environment.

Graduates of the program will:

- Have a substantive knowledge base in a selected area of nursing.
- Advance the discipline of nursing and nursing practice through the rigorous generation of knowledge using a variety of scientific inquiry methods.
- Have the ability to test, generate, and extend knowledge relevant to nursing science upon which the practice of nursing is based.
- Be prepared to engage in multidisciplinary research for advancement of health sciences.
- Demonstrate the potential for leadership in nursing and within interdisciplinary teams through scholarship and collaborative activities.

The program involves:

1. Course work
A minimum of 6 term length courses is required. Normally, the following courses will be required:

- NURS-900* Advanced Statistics and Analytic Techniques
- NURS-901* Philosophy of Nursing Science
- NURS-902* Qualitative Research Methods in Health Sciences
- NURS-903* Advanced Quantitative Measurement, Methods and Design
- NURS-906* Thesis Seminar Course

Plus, one of the following (see note below):

- NURS-905* Nursing, Health Services and Public Policy in Canada OR
- NURS-907* Independent Study OR
- NUSR-822* Nursing Research in Women's and Children's Health Issues OR
- NURS-832* Nursing Research for Complex Chronic Health Conditions OR
- NURS-833* Nursing Research for Persons at Risk for Mental Health Conditions OR
- NURS-862*Health Care Management Systems

Note: Students who completed NURS-805 at Queen's University within the past 5 years are exempt from completing NURS-905 but must take one other course to comprise the 6 term length courses that are required. If other courses on the list are not being offered

during the current academic year, students should consult with their PhD supervisor and the School of Nursing about their course requirements.

*Denotes half courses (3.0 credits).

2. Comprehensive Examination

The purpose of the comprehensive exam is to assess students' ability to critically synthesize knowledge in a substantive area of the discipline and to assess their ability to successfully pursue independent scholarship. Students will be evaluated for in-depth knowledge in theoretical and applied nursing and research methods; and theoretical and applied knowledge in their substantive area. Students will normally begin to work on the Comprehensive Examination after all coursework has been completed. Ph.D. students are expected to successfully complete their comprehensive examination within 18 months of the start of their studies. The Comprehensive Examination will contain a written component only.

3. Thesis requirement

Independent, original research and the preparation of a thesis are major requirements and make up at least two thirds of the time normally required for the program. Students must be registered in the thesis course NURS-999 throughout their time in the program. Students must have completed their courses and comprehensive exams prior to completing and defending their research thesis.

OCCUPATIONAL THERAPY

Director and Vice-Dean (Health Sciences)
Finlayson, M.

Associate Director, Occupational Therapy Program
Lysaght, R.

Professor
Brouwer, B., Finlayson, M., McColl, M.A.H.

Associate Professor
Donnelly, C., Lysaght, R.

Assistant Professor
Aldersey, H.[1], Auais, M., Batorowicz, B., Cramm, H., Fayed, N., Ghahari, S,. Kessler, D.

Professor Emeritus
Krupa, T., Paterson, M.

Adjunct Assistant Professor
Fucile, S., Parvaneh, S., Woodbury, G.

Adjunct Lecturer
Delaney, L.

Continuing Adjunct Lecturer
Edgelow, M.M., Murphy, S.

Cross-Appointed
Bona, M.

1- Queen's National Scholar Community Based Rehabilitation

Departmental Facilities

The School of Rehabilitation Therapy is housed in the Louise D. Acton building. Teaching laboratories, student meeting space, research space and clinical services are

located on the ground floor and first floor. Administration and faculty offices are on the second floor. Research laboratory facilities are located in the LDA building, Botterell Hall and Kingston Health Sciences Centre (KHSC), (amalgamated former Hotel Dieu Hospital and Kingston General Hospital), Providence Care, and the Human Mobility Research Centre (KHSC). Research spaces are well equipped to support various research programs in the study of normal and abnormal human movement, motor control, human neurophysiology cardiovascular and skeletal muscle function, and a broad range of disability and wellness in the community studies. Projects may also be undertaken in a variety of clinical and community settings external to the School of Rehabilitation Therapy.

Master of Science Occupational Therapy - M.Sc. (O.T.)

All applications from individuals seeking professional qualifications in Occupational Therapy will be processed through the Ontario Universities Application Centre, Ontario Rehabilitation Sciences Programs Application Service (https://www.ouac.on.ca/orpas/).

Admission Requirements

The Occupational Therapy program is a Master's entry-level degree program leading to the MSc(OT) degree distinction. Applicants must have a four-year baccalaureate degree or equivalent with a minimum second class standing (70%+) from a recognized university. A Statement of Intent, two Confidential Assessment Forms and a Resume are utilized in the selection process.

Program Requirements- Students admitted Fall 2018

Normally, students are enrolled fulltime for two years. As a minimum, the program requires the completion of 97 credits including a critical enquiry project or proposal.

Required Courses

- OT-801
- OT-802
- OT-823
- OT-825
- OT-826
- OT-827*
- OT-842*
- OT-846

- OT-847
- OT-851
- OT-852*
- OT-853*
- OT-861*
- OT-862
- OT-871*
- OT-875*
- OT-877
- OT-881
- OT-882*
- OT-883
- OT-884
- OT-885*
- OT-889*
- OT-897*
- OT-898

PATHOLOGY AND MOLECULAR MEDICINE

Head
Tron, V.

Coordinator of Graduate Studies
Greer, P. A.

Professor
Cole, S.P.C., Collier, C.P., Deeley, R.G., Elliott, B.E., Greer, P.A., LeBrun, D., Lillicrap, D.P., Manley, P.N., Mulligan, L., SenGupta, S., Shepherd, L.E., Tron, V., Yang, X.,Young, I.D.

Associate Professor
Berman, D., Boag, A.H., Davey, S., Feilotter, H., Hurlbut, D.J., Rossiter, J.P.

Assistant Professor
Chen, J.C.-H., Childs, T., Davidson, C.M., Farmer, P., Good, D., Isotalo, P., Manduch, M., Nicol, C., Rauh, M.

Professor Emeritus
Kisilevsky, R., Ludwin, S.K.

Adjunct Professor
Zoutman, D.

Adjunct Associate Professor
Chan, M.

Adjunct Assistant Professor
Crocker, S., Hough, C., Sangrar, W., Tam, S-P.

Cross-Appointed
Evans, G.A., Farmer, J., James, P., Lee, D., MacKenzie, J., Matthews, J., Maurice, D.H., Mueller, C.R., Petkovich, P.M., Raptis, L.H., Ropeleski, M.J.,Tayade, C., Tomalty, L.L., Young, P.G.

Fields of Research

Pathology is a study of disease and the mechanisms leading to injury. It involves a wide range of biochemical, molecular, cellular and clinical approaches. Fields of interest in the department include: cancer biology, drug resistance, metastasis, programmed cell death and cell cycle regulation, transgenic mouse models of gene function, cell differentiation and gene regulation, hemostasis/thrombosis, amyloidosis and Alzheimer's disease, disturbances in protein synthesis, and human genetics (including human gene mapping). Detailed information on faculty research interests is presented in a brochure which is available on request. See also the Department of Pathology WEB Page:
http://www.path.queensu.ca/.

Departmental Facilities

Excellent facilities are available for training in experimental pathology and basic research in cell and molecular biology. Facilities and techniques include hemtological analysis, electron microscopy, histochemistry, immunohistology, flow cytometry, two-photo confocal fluorescence microscopy, microinjection with fluorescence image analysis and time lapse capability, transgenic mice facilities for production of transgenic over-expressing and gene-knock out models, cell fractionation, tissue culture; column chromatography, DNA, RNA and protein electrophoresis; gene cloning and sequencing, using of isotopes and microarray-based global gene expression profiling.

Financial Assistance

Graduate students are encouraged to apply for financial support in the form of fellowships and studentships from external granting agencies. Graduate research assistantships, funded from grants to staff members, and teaching assistantships, funded by the University, are also available. Departmental policy ensures a minimum stipend support for graduate students.

Programs of Study

Master of Science or Doctor of Philosophy

Applicants are accepted under the general regulations of the School of Graduate Studies provided they have the appropriate background to pursue postgraduate training in pathology. The degree programs consist of course work, seminars, research, and thesis.

Postgraduate Activities

Postgraduate training programs leading to certification and fellowship in the Royal College of Physicians and Surgeons of Canada and the American Board of Pathology are offered through the Faculty of Medicine to medical graduates.

PHARMACEUTICAL AND HEALTHCARE MANAGEMENT AND INNOVATION

Program Overview

The Pharmaceutical and Healthcare Management and Innovation program is an advanced graduate diploma intended for MSc, PhD, PharmD or MD graduates. The curriculum is designed to encourage students to gain foundational understanding of the process and regulatory standards that inform drug development and commercialization in the pharmaceutical healthcare industry. Upon completion of the credential, graduates will be equipped with working knowledge of important concepts as well as hands-on experience to be successful in this specific workforce.

This credential is not laddered into another degree.

This graduate diploma falls under the auspices of the Department of Biomedical and Molecular Sciences.

Admission Requirements

Applicants to this program should have an MD, PharmD, MSc, or PhD in biomedical or public health sciences from a recognized university, with a minimum of an A- standing in the previous degree.

Applicants will also be required to submit a Personal Statement that outlines how the learning objectives of the program align with their career aspirations; and

A Curriculum Vitae that includes information on relevant extracurricular or work experience; and two academic references from individuals familiar with the candidate's academic performance which will be considered by the admissions committee.

English is the language of instruction at Queen's University. Applicants whose native languages do not include English will be required to obtain satisfactory standing in an accepted English Language Proficiency Test as part of the application process, and before final admission is granted as per School of Graduate Studies regulations.

Program Structure and Requirements

This is a full time program. The program will be 10 months in duration, consisting of one academic term of 4 months to complete the 6.0 units of core course work through the two online courses PHMI-871* and PHMI-872* , followed by a six-month, 6.0 unit, internship placement (PHMI-873).

Successful completion of the online courses is a requirement for progression into the internship. Performance of each graduate intern will be overseen by a faculty advisor who will be responsible for ensuring that the learning objectives of the internship are met and for submitting marks for the final report/research project and any other academic activities assigned during the internship.

Required courses

PHMI-871* (3.0 units) Healthcare Innovation and Development
PHMI-872* (3.0 units) Healthcare Management and Commercialization
PHMI-873 (6.0 units) Internship in Healthcare Management and Innovation

PHARMACOLOGY AND TOXICOLOGY

CHANGES TO THIS PROGRAM, AS OF SEPTEMBER 2014:

Effective September 2014, the graduate programs in Pharmacology and Toxicology become part of the Department of Biomedical and Molecular Sciences. There is no new admission to Pharmacology and Toxicology effective September 2014.

Graduate students registered in Pharmacology and Toxicology prior to September 2014 would normally be expected to follow the programs of study and degree requirements listed below.

For more information, go to: Department of Biomedical and Molecular Sciences section of this calendar.

Programs of Study

Master of Science and Doctor of Philosophy

Applicants are accepted under the general regulations of the School of Graduate Studies.

PHILOSOPHY

Head
Sypnowich, C.A.

Coordinator of Graduate Studies
Bakhurst, D.

Professor
Bakhurst, D.J.[1], Fairfield, P., Gordon-Solmon, K., Guenther, L., Kumar, R.[4], Kymlicka, W.[2], Leighton, S.R., Mozersky, J.[2], Schüklenk, U.[3], Sismondo, S., Smith, M. (Mick)[4], Sypnowich, C.A.[4]

Associate Professor
Knight, D.[4] , Mercier, A.[4], Miller, J.

Assistant Professor
Paul, E.

Professor Emeritus
Babbitt, S.E., Bickenbach, J.E., Fell, A.P., Fox, M., Laycock, H., Maclachlan, D.L.C., Macleod, A.M., Overall, C.D., Prado, C.G.

Adjunct Faculty Professor
Davies, J.M., Salay, N., Smith, M. (Mark)

Cross-Appointed
Cline, C., Farrelly, C., Green, L., Lister, A., Moore, M. Murty, R., Pratt, M., Thomas, J., Webber, G.

1 - Charlton Professor
2 - Canada Research Chair
3 - Ontario Research Chair
4 - Queen's National Scholar

Departmental Facilities

The Department of Philosophy has, in John Watson Hall, a seminar room and a lounge in which faculty and students can get together for informal discussion over coffee. Philosophy holdings in the Stauffer Library are excellent with respect to both books and periodicals.

A student-faculty ratio of approximately 2 to 1 provides not only for small formal seminars but encourages informal contact between students and faculty. The Department also maintains a weekly Colloquium in which graduate students, faculty, and visiting scholars present papers for discussion.

Financial Assistance

The Department provides remuneration to selected students in the form of Queen's Graduate Awards and teaching assistantships.

Concentration and Research

The Department offers concentrations in most major areas of philosophy. More details on this and other matters may be found in the *Handbook for Graduate Students in Philosophy*, issued annually by the Department.

Degree Programs

Master of Arts

Applicants for the degree of Master of Arts are accepted under the general regulations of the School of Graduate Studies provided that they also satisfy the admission standards of the Department. Those whose average grade in philosophy is lower than A-minus (80 percent) have little chance of admission.

For those entering the program with an Honours B.A. in Philosophy (or equivalent) the Master's program normally requires one calendar year (three terms) of full-time study. A student whose preparation in philosophy is inadequate for acceptance into the regular one-year program may be accepted as a preparatory student if any previous work in philosophy is deemed sufficiently good.

NOTE: No student admitted to a Master of Arts program in philosophy should assume any commitment on the part of the Department of Philosophy to acceptance into its doctoral program.

Requirements for the M.A. are:

i. Six one-term courses (or equivalent); at least one course must be in the subject area of epistemology and metaphysics and at least one in the subject area of value theory. Each year all graduate courses offered by the department will be classified as falling into one (or both) of the two subject areas. In special circumstances, the course distribution requirement may be waived at the discretion of the Coordinator of Graduate Studies.
ii. A Master's Research Thesis (PHIL-899) of approximately fifty pages.

Master of Arts Collaborative Program, Specialization in Political and Legal Thought (PLT)

Master's students seeking this specialization will be required to

i. take four graduate-only courses on different aspects of political thought; and
ii. take two electives in other areas of Philosophy, Political Studies or Law; and
iii. write a Major Research Project (PHIL-898).

Doctor of Philosophy

Applicants for the Ph.D. degree are accepted under the general regulations of the School of Graduate Studies provided that they also meet departmental admission requirements. Normally, an applicant with less than a first-class standing in a Master's program in philosophy (80 percent average) is not accepted for admission.

Course Requirements

Candidates must take six one-term courses (or equivalent*). At least one course must be in the subject the subject area of epistemology and metaphysics and at least one in the subject area of value theory. Each year all graduate courses offered by the department will be classified as falling into one (or both) of the two subject areas.

Area Requirement

No later than the end of the first week in June of the first year of the Ph.D. program, the Coordinator of Graduate Studies, in consultation with the candidate and relevant faculty, will form a committee of three faculty members, including one as chair, who will constitute the student’s Ph.D. supervisory committee to assist the student in identifying an area of research and mastering an appropriate reading list in preparation for the writing of the thesis. The second year is devoted to this preliminary process of

research, focusing a dissertation topic and writing a dissertation proposal in conformity with procedures described in the *Handbook for Graduate Students in Philosophy*. At the end of the second year, no later than June 30, students will be orally examined by their committee on the dissertation proposal and research work preparatory for writing the dissertation. Details on proposal submission and the oral examination are also in the *Handbook for Graduate Students in Philosophy*.

Research Tool Recommendation

It is strongly recommended that students acquire one of the following research tools, as decided upon by their committee, in relation to their area of research: Reading capacity in a language other than English, expertise in a discipline other than philosophy (e.g. English, biology) or a skill set, such as statistics. Candidates who propose to submit a thesis in an area for which knowledge of a particular language or languages other than English is deemed essential must pass an examination set in this language. Other students are encouraged to acquire such a research tool, as well as evidence that they have done so, in order to enhance their research capacity and employability.

Dissertation

The defence of the dissertation will be an oral examination conducted by an examining committee in accordance with the General Regulations of the School of Graduate Studies. The examination will focus upon the dissertation, but may extend to the general field in which the dissertation is written.

** Two one-term courses are equivalent to one full (two-term) course.*

PHYSICAL THERAPY

Vice-Dean (Health Sciences) and Director
Finlayson, M.

Associate Director, Physical Therapy Program
Pelland, L.

Professor
Hopkins-Rosseel, D., Pedlar, D.

Associate Professor
Deshpande, N., Norman, K., Parsons, T., Pelland, L.

Assistant Professor
Auais, M., Booth, R., DePaul, V., Ghahari, S., Miller, J.

Professor Emeritus
Culham, E., Olney, S.J.

Adjunct Professor
Aiken, A., McLean, L.

Adjunct Assistant Professor
Bissette, E., Gilchrist, I., Woodbury, G.

Adjunct Lecturer
Law, M.

Continuing Adjunct Lecturer
Leverette, G.

Departmental Facilities

The School of Rehabilitation Therapy is housed in the Louise D. Acton building. Teaching laboratories, student meeting space, research space and clinical services are located on the ground floor and first floor. Administration and faculty offices are on the second floor. Research laboratory facilities are located in the LDA building, Hotel Dieu

Hospital, Kingston General Hospital, Providence Care, and the Human Mobility Research Centre (KGH). Research spaces are well equipped to support various research programs in the study of normal and abnormal human movement, motor control, human neurophysiology cardiovascular and skeletal muscle function, and a broad range of disability and wellness in the community studies. Projects may also be undertaken in a variety of clinical and community settings external to the School of Rehabilitation Therapy.

Master of Science Physical Therapy

All applications will be processed through the Ontario Universities Application Centre, Ontario Rehabilitation Sciences Programs Application Service. (www.ouac.on.ca/orpas/).

Admission Requirements

Applicants are selected on the basis of a strong academic record and the assessment of personal characteristics considered most appropriate for the study of Physical Therapy at Queen's University and the subsequent practice of Physical Therapy.

Applicants must have a four year baccalaureate degree and a minimum of a second class standing (70%+) from a recognized university. In addition, applicants must have completed a course in introductory psychology and courses with substantive content in statistics, human anatomy and physiology at the undergraduate level.

In addition to academic achievement, applicants must show, through documentation of volunteer work, community service or personal experience, their strong interest in the profession of physiotherapy, knowledge of the profession and desire to work with people of all ages and abilities/disabilities. Two letters of reference and a personal information submission are required.

Program Requirements

Students are normally enrolled full time for twenty-four months, requiring as a minimum the completion of 107 credits including a critical enquiry project.

Required Courses

- PT-822* 3.0CR
- PT-841 4.0CR

- PT-850 4.0CR
- PT-851 4.5CR
- PT-852 4.5CR
- PT-853 4.5CR
- PT-854 4.5CR
- PT-855 4.5CR
- PT-856 4.0CR
- PT-857 4.5CR
- PT-858 4.5CR
- PT-859 4.5CR
- PT-861 4.5CR
- PT-863 4.0CR
- PT-864 4.0CR
- PT-865 4.5CR
- PT-881 6.0CR
- PT-882 6.0CR
- PT-883 6.0CR
- PT-884 6.0CR
- PT-885 6.0CR
- PT-898 6.0CR
- PT-897* 3.0CR

PHYSICS, ENGINEERING PHYSICS AND ASTRONOMY

Head
Dignam, M.M.

Coordinator of Graduate Studies
Courteau, S.

Professor
Chen, M.C.[8], Clapham, L., Courteau, S., Dignam, M.M., Di Stefano, P., Gao, J., Gerbier, G., Gooding, R.J.[7], Hanes, D.A., Hughes, S.[6], Irwin, J.A., Lake, K.W., McLean, A.B., Morelli, J.E., Noble, A.J., Nunzi, J.M., Widrow, L.M.[7]

Associate Professor
Fraser, J.M., Knobel, R.G., Stotz, J.A.H., Wright, A.J.

Assistant Professor
Bramante, J., Clark, K.J., Giroux, G., Martin, R.D., Shastri, B., Van Anders, G., Vincent, A.

Professor Emeritus
Atherton, D.L., Castel, B., Duncan, M.J., Evans, H.C., Ewan, G.T., Harrison, J.P., Henriksen, R.N., Johnstone, I.P., Leslie, J.R., MacArthur, J.D., Mak, H.B., McDonald, A.B., McLatchie, Wm., McLay, D.B., Robertson, B.C., Sayer, M.,Stott, M.J., Taylor, D.R., Wintle, H.J., Zaremba, E.

Cross Appointed Faculty
Carrington, T., Krause, T.[3], Loock, H.P.,Spekkens, K.[3], Wade, G.A.[3]

Adjunct Professor
Schreiner, L.J.[1]

Adjunct Associate Professor
Atkinson, W.[2], Boulay, M.G.[4], Kerr, A.T.[1], Patton, D.[2], Rau, W., Sabat, R.G.[3]

Adjunct Assistant Professor
Joshi, C.P.[1], Olding, T.R.[1], Salomons, G.J.[1], Shiell, R.[2], Wortis, R.[2]

1 Cancer Centre of Southeastern Ontario (CCSEO)
2 Trent University

3 Royal Military College
4 Carleton University
5 TRIUMF
6 On Leave June 2018 – December 2018
7 On Leave January 2019 – June 2019
8 On Leave June 2018 – June 2019

Physics, Engineering Physics & Astronomy
Telephone: 613 533-2687 Fax: 613 533-6463
World Wide Web: http://www.queensu.ca/physics

Departmental Facilities

The Department of Physics, Engineering Physics and Astronomy is located in Stirling Hall on Bader Lane. This teaching and research centre houses facilities for investigations in astronomy and astrophysics, condensed matter and low-temperature physics, engineering and applied physics, and sub-atomic physics. In addition, research is conducted at a number of external facilities.

Most of the observational work in radio astronomy is done with the Very Large Array (VLA) of the NRAO near Socorro, New Mexico and the James Clerk Maxwell Telescope in Hawaii. Optical and infrared observations are carried out at the Canada-France-Hawaii Telescope, the National Optical Astronomy Observatories, the Gemini Telescope, Lick Observatory, the Anglo-Australian Telescope, and other international facilities, including the Hubble Space Telescope. Astrophysical theorists work in the areas of general relativity, physical cosmology, high energy and particle astrophysics, star formation, and solar system dynamics. For more information, see the separate calendar entry under Astronomy and Astrophysics.

Research in many areas of condensed matter, low-temperature, and applied physics is carried out using a wide variety of equipment. Access to very low temperatures is provided by a facility for reaching millikelvin temperatures, which is unique to Canada. The Applied Magnetics group has extensive industrial collaboration, a large number of highly innovative test rigs and a major investment in state-of-the-art finite element field-computational software. The Applied Solid State Physics group has extensive facilities for physical and chemical deposition of thin films and for microcircuit

development of novel circuits integrated into silicon. The electronic states on semiconductor surfaces are studied using a high-resolution inverse photoemission spectrometer. The geometry of semiconductor surfaces is studied, at the atomic level, using electron emission holography and scanning tunnelling microscopy. The properties of two-dimensional electron gas systems over a wide range of temperature and magnetic fields are studied by precision measurements of transport properties. Data at very high magnetic fields are obtained using facilities at Nijmegen, The Netherlands. X-ray and optical experiments are used to investigate phase transitions in polymer blends and crystals with magnetic and structural disorder. This research also makes use of X-ray and neutron scattering facilities at Brookhaven and Chalk River. At the Kingston General Hospital, X-ray, gamma-ray and electron beam sources are used in investigations of ionizing radiation in various types of tissue, and the MRI scanner is used in various projects related to imaging. Nanoscale electronic and mechanical devices are fabricated using electron-beam lothography. These devices are cooled to cryogenic temperatures and studied with precision radio frequency techniques.

The research program of the experimental subatomic physics group at Queen's focuses on particle astrophysics, in particular neutrino physics and astrophysics, and dark matter detection. The experimental work takes place at the Sudbury Neutrino Observatory (SNO) and the newly expanded underground laboratory known as SNOLAB. SNO is a solar neutrino detector currently taking data in its third and final operational phase. Its unique capability of measuring the total flux of all neutrino flavours from the Sun along with the electron flavour component enables SNO to examine fundamental neutrino properties such as neutrino mass, mixing and flavour oscillations. By studying the neutrino flux from the Sun, details of the solar interior, such as the central temperature, are also being probed, allowing stringent tests of solar models. The Queen's group is actively involved in data analysis and has responsibility for the calibrations of the SNO detector. In addition to SNO, Queen's researchers are active in the development the next generation of experiments in particle astrophysics for SNOLAB. Researchers participating in the PICASSO and DEAP projects at Queen's are developing technologies and experiments for dark matter detection, with operational prototypes being installed in SNOLAB in the current and upcoming few years. Researchers at Queen's are developing the follow-up experiment to SNO, known as SNO+. A large liquid scintillator detector, SNO+ will continue to make precision measurements of fundamental neutrino properties, probing the nature of the neutrino-matter interaction and SNO+ will study geo-neutrinos, the neutrinos emitted by radioactivity in the Earth, contributing valuable new information in the field of geophysics. Researchers at Queen's are also involved in the Majorana double beta decay experiment, the next-generation experiment employing enriched germanium detectors, searching for evidence of neutrinoless double beta decay, and thus probing

neutrino mass at very low (and interesting) energy scales. Facilities at Queen's that support this research include clean rooms for assembling low background detectors, mechanical and electrical technical support, and computing.

Research facilities are supported by many computers and work-stations in the department, and by large computers in the University Computing Centre.

The department maintains a well-equipped instrument shop.

Financial Assistance

Graduate students are normally supported by various assistantships and scholarships. Students holding external awards (eg. NSERC or OGS) are offered additional support. Please contact the department for details.

Fields of Research

Astronomy and Astrophysics

a. Formation and dynamical evolution of the Solar System.
b. Non-linear dynamical systems, chaos and astrophysics, self-similarity and hierarchical structures.
c. The interstellar medium and star formation.
d. Observation studies and dynamical simulations of star clusters; star clusters in external galaxies separate class.
e. High energy astrophysics, stellar structure and evolution.
f. Theoretical and observational studies of pulsars, galactic x-ray sources, neutron stars and black-holes.
g. The interstellar medium in external galaxies, and active galactic nuclei.
h. Radio Astronomy: theoretical and observational studies of radio galaxies and extragalactic x-ray sources.
i. Galaxy formation, structure, and evolution; galaxy mergers.
j. Physical Cosmology: theoretical simulations and observations of large scale structures in the Universe; Extragalactic distance scale.
k. The early Universe: formation of large structure, dark matter.
l. Mathematical General Relativity: gravitational collapse, singularity structure, cosmic censorship, exact solutions, quantum theory on curved spacetime.

Engineering and Applied Physics

a. Film and coating deposition by CVD, sputtering and sol gel processes.
b. Materials analysis and characterisation by X-ray diffraction and electron microscopy.
c. Development of biologically active surfaces.
d. Development of advanced magnetic inspection techniques for oil and gas pipelines.
e. Development of low frequency through-wall eddy current inspection methods for heat exchangers and large diameter tubes.
f. Use of magnetic and acoustic Barkhausen noise and neutron- diffraction strain measurements to correlate stress, magnetic anisotropy and magnetic flux leakage patterns.
g. Modelling of ferromagnetic hysteresis.
h. Thin film ferroelectrics and piezoelectric transducers and actuators.
i. Modelling of fibre amplifiers and nonlinear optical propagation in fibre-optic communications systems.
j. Characterization and optimization of radiation beams used in cancer treatment.
k. Projects related to various aspects of medical imaging.
l. Fabrication and measurement of nanoscale electronic and mechanical devices.

Experimental Condensed Matter Physics

a. Study of superconductors and quantum fluids; development of low temperature bolometers for particle detection.
b. Transport properties of semiconductors and their heterostructures; reduced dimensionality systems.
c. Conduction and phase transitions in oxide films, block copolymers, and ceramics. Photoconduction and space charge in polymers.
d. Optical, x-ray and neutron scattering studies of phase transitions.
e. The study of semiconductor surfaces using inverse photoemission, electron emission holography and scanning probes.
f. Photonic devices based on optically and electronically active polymers.
g. Cryogenic measurements of quantum electronic systems at radio frequencies.

Experimental Particle Astrophysics

a. Neutrino Physics and Astrophysics (SNO, SNO+ and Majorana)
b. Solar Neutrinos and Neutrino Oscillations (SNO and SNO+)
c. Supernova Neutrinos (SNO and SNO+)
d. Geo-Neutrinos (SNO+)
e. Dark matter detection (DEAP and PICASSO)

Theoretical Physics

a. Density functional theory applied to atoms, solids and classical liquids; theory of liquids.
b. Condensed matter: strongly correlated electronic systems, Bose-Einstein condensation, mesoscopic physics.
c. Statistical physics, phase transitions, dynamical systems and approach to equilibrium; nonlinear optics of semiconductors; self-organized criticality and the dynamics of financial markets (econphysics).
d. Particle astrophysics.
e. Relativistic magnetohydrodynamics and gravitation applied to specific astrophysical problems.
f. General relativity.
g. Nuclear structure.

Programs of Study

Applicants are accepted under the general regulations of the School of Graduate Studies.

Master of Science (M.Sc.) and Master of Applied Science (M.A.Sc.)

The Departmental requirements for the master's degree program are a minimum of two full graduate courses (or four half-courses), plus research and thesis. At most, one of these four graduate level half courses can be jointly offered (double-numbered) with an undergraduate course. At least one full course (or two half-courses) must be from among those offered by the Department of Physics, Engineering Physics and Astronomy. At most, one full course (two half-courses) may be taken from a department other than Physics, Engineering Physics and Astronomy subject to the approval of the Department of Physics, Engineering Physics and Astronomy.

Doctor of Philosophy

The Departmental requirements for the Physics doctoral program are usually a minimum of six term-length graduate courses beyond the bachelor's degree level, plus research and thesis. Only two of these six graduate level courses can be jointly offered (double-numbered) with an undergraduate course. The required courses must also include two of the following three term-length courses or their equivalent:

i. PHYS-831* Electromagnetic Theory or PHYS-832* Classical Electrodynamics or an approved substitute from the Department of Electrical and Computer Engineering or the Royal Military College,
ii. PHYS-825* Advanced Quantum Theory, or
iii. PHYS-870* Statistical Mechanics.

In exceptional cases, subject to the approval of the Department of Physics, Engineering Physics & Astronomy, proficiency in Quantum Mechanics at the level of PHYS-345 will be accepted in lieu of PHYS-825*. The requirement of PHYS-825* for PhD level students would thus be waived but the total course work requirement of the PhD is not reduced.

Up to four term-length courses may be taken from a department other than Physics, Engineering Physics and Astronomy, subject to the approval of the Department of Physics, Engineering Physics & Astronomy.

An Engineering Physics doctoral student will be required to take a minimum of four term-length graduate courses (or equivalent) beyond the Master's degree course requirement. Engineering Physics students promoted from our Master's program to our Doctoral program are required to take a minimum of six term-length graduate courses past completion of the B.Sc./B.A.Sc.

A comprehensive requirement must be satisfied by passing of a candidacy examination normally held during the fourth term of full-time registration. In addition, all students will be required to participate in the course on Science Leadership and Management (PHYS-904). PhD students entering their third year of study in academic year 2017-18 need not enroll in PHYS-904 and must complete PHYS-901.

Materials Science and Technology

The Department cooperates with the Departments of Chemical Engineering, Chemistry, Electrical and Computer Engineering, and Mechanical and Materials Engineering in offering courses and research projects to students wishing to concentrate in materials science and technology. Students are registered for MSc and PhD degrees in one of these five departments and are encouraged to take relevant courses from the others.

PHYSIOLOGY

CHANGES TO THIS PROGRAM, EFFECTIVE SEPTEMBER 2014:

Effective September 2014, the graduate programs in Physiology become part of the Department of Biomedical and Molecular Sciences. There is no new admission to Physiology effective September 2014.

Graduate students registered in Physiology prior to September 2014 would normally be expected to follow the programs of study and degree requirements listed below.

For more information, go to: Department of Biomedical and Molecular Sciences section of this calendar.

Programs of Study

Master of Science and Doctor of Philosophy

Applicants are accepted under the general regulations of the School of Graduate Studies.

POLICY STUDIES (PUBLIC ADMINISTRATION)

Executive Director and Stauffer-Dunning Chair
Walker, D.M.C.

MPA Program Director
Laforest, R.

Professor
Brock, K.L.

Associate Professor
Ding, W., Laforest, R., Lehrer, S.F.

Professor Emeritus
Banting, K.G., Courchene, T.J., Harrison, P., Williams, T.R., Wolfe, R.D.

Cross-Appointed
Mabee, W.E., Nossal, K.R., Walker, D.M.C.

The School's teaching staff also includes members from other Queen's departments and from other universities as well as senior practitioners on an occasional or continuing basis.

Facilities

The School of Policy Studies is located in Robert Sutherland Hall (138 Union Street), along with associated institutes, centres and programs and the School's Publications Unit. These include the Industrial Relations Centre, the Institute of Intergovernmental Relations, the Centre for International Relations, Queen's Institute for Energy and Environmental Policy, the Centre for the Study of Democracy, and the Defence Management Studies Program. Located in the same building is the School of Urban and Regional Planning.

Located in adjoining buildings are the departments of Economics, Political Studies, Sociology, Geography, Global Development Studies, and Women's Studies in

Mackintosh-Corry Hall and the Faculty of Law in Macdonald Hall. In close proximity is the School of Business in Goodes Hall, the Joseph S. Stauffer Library, the John Deutsch University Centre and the Queen's Athletic and Recreation Centre.

Departmental facilities, including faculty and administrative offices, classrooms and small meeting rooms as well as student offices and mailboxes, are all located in Sutherland Hall. A lounge and study area, with vending machines and nearby break-out rooms, are located on the ground floor.

Philosophy

The approach to the study of public administration at Queen's School of Policy Studies is multidisciplinary, drawing on economics, political science, law, management and other disciplines. It is based on three premises.

First, the core of public administration is policy choice, design, implementation and evaluation.

Second, management and policy skills are inseparable. Without an understanding of policy goals, management in the public sector is a sterile exercise; without management skills, policy goals are empty promises.

Third, effectiveness in policy and administration requires a critical awareness of the economic, legal, political and social context in which they occur and of the need to weigh competing values.

Programs

The School of Policy Studies' Master of Public Administration (MPA) degree can be completed in one-year (three terms) of full-time study. The MPA is designed to meet the needs and interests of recent university graduates from many disciplines as well as career employees seeking to change or upgrade their qualifications.

A part-time Professional M.P.A. (PMPA) is also available to academically qualified applicants with a minimum of five years related employment experience.

In cooperation with the Faculty of Law at Queen's University, the School also offers the four-year combined degree program, the M.P.A./J.D.

Financial Assistance

All candidates applying for full-time studies will be considered for financial support from Queen's University. Qualification for Queen's University awards is generally based on academic merit. These resources are limited, however. Prospective candidates are strongly encouraged to apply for Ontario Graduate Scholarships and other major awards available from national, provincial and private agencies.

Admissions

Applications are accepted under the general regulations of the School of Graduate Studies. The normal minimum academic qualification for admission to the MPA and PMPA programs is a four-year bachelor's degree, with minimum B+ standing, in their last two years of study, or its equivalent.

Professional MPA candidates must also have five years experience in the public sector or in related activities. Applicants, with significant employment experience, who do not meet the normal minimum academic qualification, must provide additional evidence of strong academic potential. This evidence normally involves completion of two courses at the fourth-year undergraduate or graduate level, with a minimum B+ standing in each course or completion of the Graduate Admission Examination (GRE) or the Graduate Management Admission Test (GMAT), with a minimum score at the 75 percentile in the verbal and analytical categories.

The MPA and PMPA programs provide advanced skills for professional employment in Canada's governments and other public, nonprofit and private sector organizations concerned with policy-making. Consequently, the curriculum focuses on public policy and management in Canada.

International students considering admission to the MPA program should have some prior knowledge of Canadian government and politics and an interest in extending their knowledge in these fields. Any applicant whose native languages do not include English must submit evidence of their proficiency in English. A TOEFL score of 100 on the Internet-based test or 600 on the paper-based test is required for admission.

Program admissions are normally limited each year to sixty-five full-time and thirty-five part-time students.

Degree Programs

Master of Public Administration (M.P.A)

Qualification for the MPA degree requires the successful completion of either the MPA Full-time or the Professional MPA program, in accordance with the regulations of the School of Graduate Studies. Both programs are described below.

1. Full time MPA Program (MPA)
Students in the MPA program must complete 36 credit hour (or 12 half-course credits).

Core Courses: MPA students normally complete six required courses in three groups:

a. Political and Institutional Analysis
    - MPA-800* Governing Institutions
    - MPA-802* Approaches to Policy Analysis
    - MPA-810* Policy Challenges
b. Economic and Quantitative Analysis
    - MPA-804* Principles of Economics
    - MPA-805* Quantitative Analysis
    - AND at least one of
    - MPA-815* Economic Analysis
    - MPA-816* Quantitative Program Evaluation
    - MPA-840* Economics of Social Policy
    - MPA-849* Behavioural Public Finance
c. Management
    - MPA-809* Management in the Public Sector

Where an MPA student can demonstrate an adequate background in the subject matter of MPA-800*, MPA-804*, MPA-805* or MPA-809*, the student may receive an exemption from that course. Students exempted from MPA-804* may replace it with one of MPA-815*, MPA-840*, MPA-844*, MPA-849* or a broadly based policy-oriented course in the Department of Economics approved by the MPA Program Director. Students exempted from MPA-805* will replace it with MPA-816*.

Optional Courses
MPA students complete the remaining requirements by taking optional courses offered by the School of Policy Studies or other departments within the School of Graduate Studies or the Faculty of Law. In exceptional cases, a student may be permitted to take an undergraduate course. Optional course choices offered by other departments are subject to approval by the course instructor and the MPA Program Director. Students may choose to complete a Master's Project, in lieu of two optional half-courses.

2. Professional MPA Program (PMPA)
The newly revised PMPA curriculum includes core courses in leadership, governance, economics, research methods, policy analysis and management and quantitative methods. In elective courses and a final capstone group project, program participants apply their learning to the analysis and resolution of real-world policy and management issues.

Core Courses: PMPA students normally complete six (3 credit) courses and two (1.5 credit) courses within four groups:

a. Public Sector Leadership

- MPA-823 Concepts of Leadership
- MPA-824* Leadership in Practice

b. Analytical Tools

- MPA-804* Principles of Economics
- MPA-806* Analytical Tools for Policy Research
- MPA-802* Approaches to Policy Analysis

c. Governance and Management

- MPA-800* Governing Institutions
- MPA-809* Management in the Public Sector

d. Integration

- MPA-825 Team Leadership Project

Where a PMPA student can demonstrate an adequate background in the subject matter of one or more of the core courses, the student may receive an exemption from that course.

Optional Courses
Professional MPA students complete the remaining requirements by taking optional courses offered by the School of Policy Studies or other departments within the School of Graduate Studies or the Faculty of Law. Optional course choices offered by other departments are subject to approval by the course instructor and the MPA Program Director. Students may choose to complete a Master's Project, in lieu of two optional half-courses.

Joint M.P.A/J.D. Cooperative Degree Program

The M.P.A./J.D. program is a four-year combined degree program, designed for students who wish to combine advanced studies in public policy and management with substantive and practical legal studies, for future career employment as a lawyer and public policy analyst with the federal or a provincial government, as in-house counsel for a public advocacy organization or with a private law firm focusing on constitutions and administrative law or government relations. Traditional areas of curriculum strength include a solid record of policy development in respect to constitutional law, social justice issues, defence, economics, family law and health policy.

Students complete the M.P.A. degree, with prescribed law electives in the first year, and the J.D. degree the next three years. Combined program students may choose to complete the certificate program at the Queen's International Study Centre in Public International Law, go on international exchange and pursue broader opportunities through the conventional summering and articling processes after graduation.

Candidates to the M.P.A./J.D. combined degree program must complete concurrent applications for the M.P.A. and J.D. programs and meet the admission requirements set for both. A maximum of five candidates will be admitted each year. Acceptance into both the M.P.A. program and the J.D. program is a prerequisite to admission into the joint M.P.A../J.D. program.

The program is structured as follows:

1. **M.P.A.year (10 months)**

   Students must normally complete the M.P.A. core courses, MPA-800, MPA-802, MPA-804, MPA-805, MPA-809, and one of MPA-815, MPA-816, MPA-840 or MPA-844, and two elective courses as well as LAW-140/141/142 Public Law, LAW-150/151/152 Constitutional Law, LAW-160/161/162/163 Contracts, and LAW-115/116/117 Introduction to Legal Research and the First Year Legal Foundations Program in the Faculty of Law.

   For the remainder of the program, students are registered as law students.

2. **J.D. first year (8 months)**

   Students are required to take LAW-180/181/182 Property, Law 190/191/192/193/194 Torts, LAW-170/171/172/173 Criminal Law, LAW-225/226

Civil Procedure, LAW-427 Administrative Law and one additional elective course in each term (totalling 14-17 credits per term.

Students may seek to participate in a Global Law Program at the International Study Center and earn nine upper-year credits toward the J.D. degree through this program.

3. **J.D. second year (8 months)**

   Students complete the remaining requirements of the J.D. degree, including the upper-year credit requirement, the Advocacy requirement, the Practice Skills requirement and the Law-496 Public Service; Individual Supervised Project. As a general rule, students complete Law-496 Public Service Individual Supervised Project in the third year. This paper can be used to satisfy the substantial term paper degree requirement for the J.D. degree. Students also register in a full-time courseload of upper year law electives.

PROTEIN FUNCTION DISCOVERY

Head
Mak, A.S.

Coordinator of Graduate Studies
Côté, G.P.

Faculty
Martin, N.L., Nesheim, M.E., Smith, S.P.

Program Outline

The Collaborative Program in Protein Function Discovery is based on the Graduate Programs in the Departments of Anatomy and Cell Biology, Biochemistry, Biology, Microbiology and Immunology, Pathology and Pharmacology and Toxicology. The Program aims to train doctoral students in the key research technologies needed to elucidate protein structure and function and to provide a research environment where the student can apply these skills to important topics in basic science and health research.

Facilities

In addition to the research facilities available in the participating Departments the Collaborative Program has six laboratories outfitted with state-of-the-art equipment for protein characterization. Five of the laboratories are located in Botterell Hall, the major building for the basic medical sciences. These include a Proteomics and Mass Spectrometry laboratory containing MALDI-TOF and Q-TOF mass spectrometers; a Bioinformatics Center equipped for modeling protein structures; an Imaging Center containing a multi-photon confocal laser microscope, a digital fluorescence microscope, a fluorescence activated cell sorter and a cell microinjector; a Protein Interaction Laboratory outfitted with Biacore, analytical ultracentrifuge, micro-calorimeters, fluorescence lifetime spectrometer and rapid scanning CD and UV spectrophotometer; and a Protein Structure Determination Center containing a 600 MHz NMR spectrometer and facilities for X-ray crystallography. A Cell and Protein Production facility equipped with several bio-fermenters is located in Dupuis Hall.

Financial Assistance

The Collaborative Program in Protein Function Discovery is funded by the Canadian Institutes for Health Research (CIHR) as a National Training Program. The Program provides full financial support to students during the first year of graduate studies. All students are encouraged to apply for financial support in the form of fellowships and studentships from external funding agencies. Research assistantships funded from grants held by faculty members and departmental teaching assistantships are also available.

Fields of Research

The current research interests of each member of the Collaborative Program are summarized on our website www.queens-pfd.ca. The Program offers research and courses that emphasize an integrated approach to the elucidation of protein structure and function and embraces the following fields: bioinformatics; protein expression and purification; biochemical and biophysical analysis of proteins; three-dimensional structural analysis of proteins; proteomics and mass spectrometry; protein imaging in cells; protein function in model organisms; protein function in health and disease.

Programs of Study

Admission to the Collaborative Program is limited. The Program encourages the enrolment of students from a variety of backgrounds and disciplines, but strong preference will be given to students who intend to pursue a doctoral degree. Students interested in applying to the Program should first contact the Director of the Collaborative Graduate Program. Applicants must apply to, and be accepted by, the graduate program of one of the participating Departments. An Admissions Committee, comprised of faculty from the participating Departments, will then review the applications and recommend students for admission to the Collaborative Program.

Master of Science and Doctor of Philosophy

All entering students will undertake an intensive "Training Period" during which they will take the three courses offered by in the PROT-82- series. These courses provide the theoretical background and hands-on training in key technologies and involve research rotations through the laboratories of faculty associated with the program. A Supervisory Committee consisting of three faculty members associated with the Collaborative Program will be established for each student. The Supervisory Committee

will be responsible for monitoring and evaluating the student's progress and will advise the student on the choice of a research supervisor.

Students who successfully complete the Training Period will select a research supervisor from among the faculty associated with the Collaborative Program and will undertake a thesis research project. Transfer between Departments is allowed following the training period, so that students will have the option of selecting a research supervisor from any Department affiliated with the Collaborative Program. Students will be required to satisfy all the academic requirements of the Department-of-registration, which may include additional course requirements.

POLITICAL STUDIES

Head
Csergö, Z.

Graduate Chair
Lister, A.

Professor
Amyot, G.G., Conaghan, C.[1], Farrelly, C.[1], Haglund, D.G., Hiebert, J., Little, M., McGarry, J., Moore, M.[1], Nossal, K.R.

Associate Professor
Cox, W., Csergö, Z., Goodyear-Grant, E., Grant, J.A., Haklai, O., Lister, A., MacDonald, E.[1], Rose, J., von Hlatky, S.[2]

Assistant Professor
Chakrabarti, P., Hanniman, K..[3], Martel, S.

Professor Emeritus
Banting, K.G., Berman, B.J., Black, E.R., Franks, C.E.S., Gunn, J.A.W., Lele, J.K., Leys, C., Meisel, J., Page, S.C., Pentland, C.C., Perlin, G.C.

Cross-Appointed
Boulden, J., Breede, H.C., Brock, K.L., Jolicoeur, P.,Kymlicka, W., Leuprecht, C., Soederberg, S., Sokolsky, J., Wolfe, R.D.

1 - On Leave July 1-December 31, 2018
2 - On Leave July 1, 2018-June 30, 2019
3 - On Leave July 1, 2018 – February 15, 2019

Relevant Facilities

The Centre for the Study of Democracy and Diversity (CSDD)

The Centre was established as the Centre for the Study of Democracy in 1993 with a broad set of objectives related to research, education, and policy to support democratic development. Under its new mandate as the Centre for the Study of Democracy and

Diversity, its objectives have been expanded to incorporate a specific stream of activities focused on research, education, and international assistance to promote and support democratic development in ethnically and culturally diverse societies. (https://www.queensu.ca/csd/home)

Canadian Opinion Research Archive (CORA)

The Canadian Opinion Research Archive makes available commercial and independent surveys to the academic, research and journalistic communities. Founded in 1992, CORA contains hundreds of surveys including thousands of discrete items collected by major commercial Canadian firms dating back to the 1970s. The CORA website (Canadian Opinion Research Archive, http://www.queensu.ca/cora/) includes readily accessible results from these surveys, tracking Canadian opinion over time on frequently asked survey questions, as well as tabular results from recent Canadian surveys, and more general information on polling. Individuals conducting research for non-commercial purposes are able to get access to the CORA electronic holdings and conduct searches of the database. Researchers are able to conduct the full range of bivariate and multivariate analysis on data through the Nesstar interface.

The Institute of Intergovernmental Relations (IIGR)

This institute was established to provide a centre for research into the problems of intergovernmental relations in Canada and elsewhere. The Institute is pleased to support the work of graduate students with an interest in federalism keeping in mind that the Institute does not offer courses or grant degrees. (https://www.queensu.ca/iigr/home)

The Centre for International and Defence Policy (CIDP)

The Centre was established in 1975. It is an interdisciplinary research centre located in the School of Policy Studies. The Centre's research interests focus on defence policy, homeland security policy, and Canada's international policy. The Centre offers no courses, but welcomes the active involvement of graduate students who have complementary research interest. (https://www.queensu.ca/cidp/)

The School of Policy Studies

Departmental staff occasionally contribute to the teaching program of the School of Policy Studies. During the Spring Session (April-June), the School offers seminars in public policy in which there is sometimes room for Politics students. Special enrolment

permission should be sought from both the Graduate Chair and the School. (https://www.queensu.ca/sps/)

Financial Assistance

The department is able to offer a number of teaching assistantships, which involve assisting professors in undergraduate courses. For details, consult the Graduate Chair.

Programs of Study

Applicants are accepted under the general regulations of the School of Graduate Studies. Applicants to the M.A. program must have a 4-year undergraduate degree in political science or equivalent with a minimum B+ average; applicants to the Ph.D. must have an M.A. in political science or equivalent with an A- average.

Further information regarding program requirements may be found in the Graduate Handbook, available on the Department's website.

Master of Arts

The M.A. is a one-year program that consists of six half-courses, with a 50-60 page major research paper (POLS-898*) (which may be developed out of a term paper in one of the courses). This MRP will be supervised by a member of faculty, and graded by that person and one other faculty member who has knowledge of the subject. All students will be expected to enrol in three half-courses in the first term.

Master of Arts Specialization in Political and Legal Thought

Master's students in this specialization will be required to take a total of six term-length courses, a minimum of four of which must be courses designated as Political and Legal Thought (PLT), from the Department of Political Studies, the Department of Philosophy, or the Faculty of Law. PLT students also write a 50-60 page major research paper (POLS-898*).

Doctor of Philosophy

Candidates for the Ph.D. are required to pass POLS-900* and five other one-term courses offered for graduate credit; to demonstrate translation proficiency in a language other than English; to pass examinations in two fields of concentration; to defend a thesis proposal; and to submit and defend a thesis.

Fields of Concentration

The fields of concentration offered by the department are i) Canadian politics; ii) comparative politics iii) gender and politics; iv) international relations; v) political theory. Candidates will choose two fields of concentration in consultation with the Graduate Chair.

Language Requirement

Candidates must demonstrate translating competence in a language other than English that is appropriate to their thesis research. French is mandatory for candidates writing theses in Canadian politics. The language requirement should be met as early as possible in the student's program, and not later than one year after acceptance of the student's thesis proposal. Graduate School regulations state that the language requirement must be fulfilled at least one year prior to the submission of the student's thesis.

Thesis

Each candidate must submit a thesis proposal, which will include a substantial review of the literature in the field. The proposal should normally be submitted in the fifth term after initial registration. The proposal must be accepted by a thesis committee before the candidate is permitted to proceed. The thesis will be examined by a committee as required by the general regulations.

Field Exams

Before proceeding to the thesis, students must pass qualifying examinations in their chosen fields. These examinations will be held each year at the beginning of term 4. For the first field, the student takes a written and oral exam. For the second field, only a written exam is taken. Only those students who have completed all work in six courses will be permitted to write the field examinations. Candidates who fail one field examination may rewrite that examination in January; candidates who fail any two attempts at field exams will be required to withdraw from the program.

PSYCHOLOGY

Head
W. Craig

Associate Head
Olmstead, M.C.
Wilson, D.E.

Coordinator of Graduate Studies
Dringenberg, H.C.

Professor
Craig, W., Dringenberg, H.C., Fabrigar, L.R., Fekken, G.C., Flanagan, J.R., Harkness, K.L., Holden, R.R., Lindsay, R.C.L., MacLean, A.W., Munhall, K.G., Olmstead, M.C., Pukall, C.F., Sabbagh, M., Troje, N.

Associate Professor
Bowie, C., Castelhano, M., Chivers, M., Fitneva, S.A., Hollenstein, T., L.R., Jacobson, J.A., Ji, L., Kelley, E.A., Kuhlmeier, V.A., MacDonald, T.K., Menard, J., Parker, P., Tripp, D.A., Wilson, D.E.

Assistant Professor
Booij, L., Poppenk, J.

Professor Emeritus
Beninger, R.J., Berry, J.W., Cuddy, L.L., Donald, M.W., Freedman, N., Frost, B.J., Gekoski, W.L., Knapper, C.K., Knox, V.J., Lederman, S.J., Marshall, W.L., Mewhort, D., Minnes, P.M., Muir, D.W., Murray, D.J., Peters, R.Dev, Quinsey, V.L., Weisman, R.G., Wilde, G.J.S., Zamble, E.

Adjunct Associate Professor
Atkinson, J., Davidson, J., Harris, G.T., Rice, M.

Adjunct Assistant Professor
Altrows, I., Buell, K., Condra, M., Cotton, D.H.G., Harrison, A.D., Howell-Moneta, A., Kilik, L., Irwin, J., Looman, J., Marcotte, G., Meyers, S., McKim, W., Phillips, S., Rivera, M., Rossy, N., Rowe, R., Singh, G., Wasson, C., Wilson, J., Valsangkar-Smyth, M., Vetere, C., Villeneuve, D.

Cross-Appointed
Barling, J., Brodt, S.E., Browese, R., Cooper, W., Jones, J., Kirby, J.R., Kisilevsky, B., Milev, R., Montgomerie, R., Munoz, D.P., Paré, M., Ratcliffe, L.M., Raver, J., Robertson, R.M., Upitis, R.B., Wade-Woolley, L.

Mission Statement

The mission of the graduate program in psychology is to build on the strength of its students, faculty, and staff in providing an internationally renowned program that is known for: the excellence and integrity of its faculty, students, and training; the innovation and value of its research, scholarship, and skill development; and the fostering of leadership in the delivery of service to the community, to the field of psychology, and to society.

Objectives

The graduate program will be an integrated, organized structure that: develops scientific, critical thinking, and communication skills; promotes freedom of inquiry and expression; attracts high quality students to Queen's University; trains students in skills relevant for employment in a variety of psychological contexts, such as academic, government, and private sector settings; develops leaders in the discipline of psychology in both scientific and applied contexts; achieves an appropriate balance between research and applied components of psychology; responds flexibly to meet the changing needs of students and the profession; promotes professional and scientific responsibility and integrity; provides an environment that respects the equal dignity of all persons and the right to freedom from harassment, intimidation, and discrimination.

Departmental Facilities

Humphrey Hall and the adjacent Craine building contain most of the laboratory, teaching, and technical facilities of the Department of Psychology, facilities for the study of perception and action, including laboratories for the study of optical flow, pattern vision, psychoacoustics and auditory psychophysics, tactile psychophysics and haptic perception, full-body motion, speech synthesis, music perception, eye-hand coordination, facial animation, and human factors relating to teleoperation, and virtual reality. Behavioral neuroscience facilities include multi- and single-unit recordings, intracerebral microdialysis, and image analysis, as well as laboratories for studying

animal learning and cognition, avian and insect navigation, and birdsong. There is a human sleep laboratory, and laboratories for the study of human memory, decision and categorization phenomena, and reading processes. There are extensive facilities for research in developmental psychology, from infancy through old age, including laboratories for studying infant perception, language acquisition, lying, aggression and victimization. There are facilities for computer-administered experiments in personality, social interaction and influence, and social judgement, as well as eyewitness identification and jury decision-making. Research facilities are also available through various community hospitals, federal penitentiaries in the Kingston area, and through other community health-based institutions.

The Department of Psychology also maintains computing resources of varying sizes and configurations located in laboratories. It houses a teaching laboratory for applied statistics in a computing environment. The Department is affiliated with the High-Performance Computing Virtual Laboratory, Canada's largest academic high-performance computing facility, operated by a consortium of four universities (Queen's, Royal Military College, Ottawa, and Carleton). The Department provides training in parallel computing applied to behavioural phenomena. It also has facilities for the computational modeling of cognitive processes.

Financial Assistance

Federal, Provincial, and University fellowships, scholarships, and bursaries are available. In addition, a number of Departmental assistantships are offered in return for tutorial or research services to the Department. Inquiries regarding eligibility and other information about financial aid should be addressed to the Coordinator of Graduate Studies, Department of Psychology.

Fields of Research

Research is at present being carried out in the following areas: brain function; neuroplasticity; behavioral neuroscience; psychopharmacology; evolutionary psychology; animal learning and behavior; sleep; psychophysics; motor control and action; visual perception and physiology; auditory perception; tactile and haptic perception; multimodal perception; sensory interfaces for teleoperation and virtual-reality systems; perceptual learning; psychology of music; cognitive neuroscience; cognitive processes; computational modelling of basic cognitive processes; decision and classification; memory; psychology of reading; letter and word identification; language learning; psycholinguistics; cognitive development; infant development; developmental

disabilities; early experience; aging; social cognition; attitudes; psychometrics; clinical assessment; behaviour analysis; health psychology; child and adult mental health; intervention; rehabilitation; parenting; addiction; eating disorders; psychology and the law; delinquency; eyewitness psychology.

Programs of Study

Applicants are accepted under the general regulations of the School of Graduate Studies. The Department requires applicants to have written the Graduate Record Examination.
Four programs are offered: Brain, Behaviour and Cognitive Science; Clinical; Developmental; and Social-Personality.

Master of Science

The master's program normally extends over two calendar years. For students with an honours degree in psychology the requirements for the master's program are: PSYC-801*, PSYC-802* and PSYC-899 (thesis to be completed by the end of the second year in the program), plus the following program-specific requirements:

Brain, Behaviour and Cognitive Science

The master's program normally extends over two calendar years. For students with an honours degree in psychology the requirements for the master's program are: PSYC-801*, PSYC-802*, PSYC-899 (thesis to be completed by the end of the second year in the program), and two of PSYC-811*, PSYC-812*, PSYC-907* and PSYC-908*. Students take two additional full (i.e., four half*) courses selected in consultation with the supervisor and the Program Chair. Students in the Behavioural Neuroscience stream are encouraged to take courses from the following list (PSYC-833*, PSYC-931*, PSYC-932*, PSYC-934*, and PSYC-935*). Students in the Behavioural Neuroscience stream also take QACS-799. Students in the Cognition & Perception stream are encouraged to take courses from the following list (PSYC-921*, PSYC-930*, and PSYC-965*). Additional courses frequently taken include PSYC-825*, PSYC-917*, and PSYC-970*. Graduate courses offered by Departments other than Psychology also may be taken to meet the program requirements with the permission of the supervisor and program chair.

Clinical

Over two years, students take PSYC-805*, PSYC-806*,PSYC-809*, PSYC-827*, PSYC-829*, PSYC-838*, PSYC-839*, PSYC-847* and in M.Sc.2, one of PSYC-878* or PSYC-910*.

Developmental

Two statistics courses: PSYC-801*, PSYC-802*

Two of the following proseminars: PSYC-841*, PSYC-851*, PSYC-852*

One Devel. Theory Cours: PSYC-842*or PSYC-843*

Normally, One Cognitive Devel. Course: PSYC-853*, PSYC-854*, or PSYC-855*

Normally, One Social Devel. Course: PSYC-856*, PSYC-857*, or PSYC-859*

Social-Personality

In each of the two academic years, students normally take two courses from PSYC-846*, PSYC-942*, PSYC-943*, PSYC-944*, PSYC-945*, PSYC-946*, PSYC-947*, PSYC-948*, PSYC-979*, PSYC-980*, PSYC-981*, and PSYC-982* selected in consultation with the student's supervisor and the Program Chair. In the second year of the program, students also take either PSYC-940* or PSYC-941*.

Doctor of Philosophy

The requirements for the program are: PSYC-999, the Comprehensive Examination required by the specific program, and:

Brain, Behaviour and Cognitive Science

The doctoral program in Brain, Behaviour and Cognitive Science may be completed in two years of study by students with a master's degree in psychology. Typically, however, students require more time to complete the doctoral program.

The requirements for the program are: PSYC-999, two of PSYC-811*, PSYC-812*, PSYC-907*, and PSYC-908* and the Comprehensive Examination required by the specific program. Graduate students in the BBCS program are encouraged to participate in the Brain, Behaviour and Cognitive Science Research Seminar even after completing PSYC-811*,PSYC-812*, PSYC-907*, and PSYC-908* for as long as they are registered full time in the program.

Clinical

Students take PSYC-989*, PSYC-990*, PSYC-991*, PSYC-992* and PSYC-993; and at least one of PSYC-951*, PSYC-952*, PSYC-974* or PSYC-957*; and oneof PSYC-878* or PSYC-910*. Students take three additional half courses from those offered in the Department or, with permission of the Chair of the Clinical program and the Departmental Coordinator of Graduate Studies, from courses offered in other departments.

Developmental

One of the following: PSYC-841*, PSYC-851*, PSYC-852*.

Two of the following: PSYC-842*, PSYC-843*, PSYC-853*, PSYC-854*, PSYC-855*, PSYC-856*, PSYC-857*, PSYC-859*.

Social-Personality

Ph.D. students take either PSYC-940* or PSYC-941* (normally in the first year of the program); one course from PSYC-846*, PSYC-942*, PSYC-943*, PSYC-944*, PSYC-945*, PSYC-946*, PSYC-947*, PSYC-948*, PSYC-979*, PSYC-980*, PSYC-981*, and PSYC-982*; and two additional courses either from the list or selected in consultation with the student's supervisor and the Program Chair.

Social-Personality Ph.D. students who do not have a Master's degree in Social Psychology take either PSYC-940* or PSYC-941* (normally in the first year of the program) and three courses from PSYC-846*, PSYC-942*, PSYC-943*, PSYC-944*, PSYC-945*, PSYC-946*, PSYC-947*, PSYC-948*, PSYC-979*,PSYC-980 *, PSYC-981*, and PSYC-982*.

Professional and Ethical Behaviour

Students are expected to act in a professional and ethical manner in accordance with the current Standards of Professional Conduct (College of Psychologists of Ontario) and the Canadian Psychological Association Code of Ethics. It is very important, therefore, that students be familiar with these documents and clarify any concerns they have with their supervisor. A failure to show professional and ethical behaviour may provide grounds for dismissal.

PUBLIC HEALTH SCIENCES

Head
Hunter, D.

Graduate Coordinator
Pickett, W. (until January 2019); King, W. (after January 2019)

Program Directors
M.P.H.: Weir, E.
M.Sc.: Aronson, K
M.Sc. Biostatistics Collaborative: Peng, P.
Ph.D.: Groome, P.

Professor
Aronson, K., Groome, P., Janssen, I., Ouellette-Kuntz, H., Peng, P., Pickett, W., Stuart, H.L., Tu, D.

Associate Professor
Castleden, H., Chen, B., Ding, K., Hunter, D.J.W., Johnson, A., King, W., Richardson, H.

Assistant Professor
Davison, C.

Professor Emeritus
Lees, R.E.M., Steele, R.

Adjunct Professor
Arboleda-Florez, J.E., Booth, C., Brundage, M., Donnelly, P., Mackillop, W.J., Moore, K., O'Callaghan, C., Zoutman, D.

Adjunct Associate Professor
Belanger, S., Gemmill, I., Harvey, B.

Adjunct Assistant Professor
Alvarado-Llano, B., Arbuckle, T., Belanger, P., Brogly, S., Carter, M., Huras, P., Majury, A., Miao, Q., Rebellato, S., Sahai, V.

Adjunct Lecturer
Day, A., Hopman, W., Zhang-Salomons, J.

Cross-Appointed
Bartels, S., Bayoumi, I., Brison, R., Brooks, S., Carpenter, J., Duffy, A., Fergus, S., Flemming, J., Gill, S., Green, M., Hanna, T., Heyland, D., Lougheed, D., McColl, M.A., Medves, J., Murray, H., Phillips, S., Rosenberg, M., Seitz, D., Towheed, T., Tranmer, J., Turner, K., Velez, M., Weir, E.

Telephone
(613) 533-2901 (M.Sc. and Ph.D. programs)
(613) 533-2234 (M.P.H. Program)

Web address
http://www.queensu.ca/phs/

Mission of the Department

The Department of Public Health Sciences was established in 1968 (originally named the Department of Community Health and Epidemiology). The mission of the Department is to advance scientific knowledge relevant to research in public health sciences and to participate in the dissemination and application of scientific knowledge to the solution of health, health care, and health system problems. The Department offers a thesis-based Master of Science degree in epidemiology,a non-thesis based Master of Science degree (Biostatistics Collaborative), a professional Master of Public Health degree and a Ph.D. in epidemiology. It also contributes to education in the undergraduate medical curriculum as well as the undergraduate Life Sciences curriculum.

Purpose of the M.Sc. Program

Epidemiology is the study of the distribution and determinants of health-related events in populations and the application of this study to the control of health problems. The purpose of the M.Sc. program is to provide the common methodological foundation from which to conduct research across diverse health-related areas. Toward this end,

the Department offers a two-year research-based M.Sc. degree with one cycle of enrollment in September of each year.

Students graduate from the program with an ability to: communicate scientifically; describe trends and patterns of disease incidence and prevalence; critically review scientific literature related to community health and epidemiology; apply epidemiologic and analytic methods in the design of research; collect, analyze and interpret health data; conduct a study; and write and defend a thesis.

Study satisfactorily completed by physicians may fulfill part of the requirements for Fellowship in Public Health and Preventive Medicine of the Royal College of Physicians and Surgeons of Canada.

Purpose of the M.Sc. Collaborative Program in Biostatistics

The M.Sc. Collaborative program in Biostatistics was created in response to the growing demand in Canada and the United States for qualified Master's level biostatisticians in academic and industry sponsored epidemiologic and health services research.

The purpose of the collaborative program in Biostatistics is to produce graduates who will be capable of working as biostatistical consultants within multi-disciplinary health research teams. This objective will be achieved through coursework that will equip students with a sound knowledge in observational and experimental epidemiologic designs, statistical theory, statistical models for health data analysis, and statistical computing. A four month practicum will allow students to apply basic knowledge and develop consulting expertise within a health research group in a university of industry setting.

Purpose of the Master of Public Health Program

The Master of Public Health is a professional, course-based degree that educates, equips and inspires students to take Evidence-Informed Action for Public Health.

The degree is 16 consecutive months in duration, attracting applicants from a range of disciplines.

A 12-month accelerated program is available for candidates with at least two years of cumulative paid work experience in health care, public health or a related field.

By the completion of the program, graduates are able to:

- Define public health issues using a population health approach
- Search for evidence to address public health issues
- Appraise and interpret public health evidence
- Synthesize evidence to develop recommendations for public health action
- Adapt public health communication and evidence-based interventions to specific contexts and populations
- Plan to implement public health programs, services and policies
- Evaluate the process and outcomes of public health actions
- Demonstrate development of core attitudes and values of a public health professional.

Each of these eight program outcomes is critical to enable evidence-informed action for public health.

Study satisfactorily completed by physicians may fulfill part of the requirements for a Fellowship in Public Health and Preventive Medicine from the Royal College of Physicians and Surgeons of Canada.

Purpose of the PhD Program

The primary objective of the PhD program is to train epidemiologists as independent investigators in academic or equivalent research positions, or in a position of professional leadership in a health or health-related agency where research is an important function. Our program accommodates epidemiologic research in the areas of population and public health, health services and policy, and clinical medicine.

Three elements comprise the program: coursework, comprehensive exam, and a dissertation. Through coursework and a comprehensive examination, students will demonstrate a mastery of theories, methodological concepts, and substantive knowledge integral to epidemiology and their area of specialization. Through the dissertation process, students will demonstrate the ability to undertake epidemiologic studies, including the ability to: 1) critically appraise and synthesize biomedical literature surrounding epidemiologic topics and concepts; 2) develop novel hypotheses that can be examined via epidemiological study; 3) develop practical epidemiological study designs aimed at testing these hypotheses and write scientific protocols that summarize research plans; 4) collect, and/or process, analyze, and interpret data; and, 5) understand the implications of findings within appropriate population health, health services/policy, or clinical contexts.

Areas of Research

Faculty members conduct research in a wide variety of areas related to epidemiology, clinical trials, biostatistics, health services research, health policy, and health economics. Within these broad disciplines, specific content strengths include: cancer epidemiology, injury epidemiology, environmental health, developmental disabilities, psychiatric epidemiology, mental health, home care, health reimbursement mechanisms, health care utilization, and community care. Opportunities in many of these areas are strengthened by formal affiliations with research groups such as: The Canadian Cancer Trials Group (CTTG) and the Division of Cancer Care and Epidemiology, both located in the Queen's Cancer Research Institute, Centre for Health Services and Policy Research, Queen's - ICES Health Services Research, Social Program Evaluation Group, the Centre for Studies in Primary Care, the Centre for Obesity and Research Education(CORE), the Nursing (PRN) Group, Mental Health Research Group, KFL&A Public Health, and the Clinical Research Unit at Kingston General Hospital.

Financial Assistance

PhD candidates who are accepted into the program will be guaranteed four year funding of $18,000 per year minimum. This amount may be higher based upon available external and internal awards.

Funding is provided for all first and second year full-time MSc students although there is no guaranteed minimum. Qualified candidates will be automatically nominated for internal Queen's Fellowship and Graduate Awards. Students who are eligible are required to apply for Ontario Graduate Scholarships, and encouraged to apply for other major awards available through national, provincial, or private funding bodies.

There is no guaranteed funding for students in the professional MPH program, although some of the practicums offered for the summer term will provide funding.

Each year there are a limited number of teaching assistantships. Positions are posted in July of each year and are awarded according to the instructor's assessment of skills for the position. Students in the second year of their MSc Epidemiology or PhD program will be assigned a teaching assistantship as part of their guaranteed departmental funding.

Students may also be employed by individual faculty members as research assistants. Research assistantships vary according to the availability of positions.

Departmental Facilities

Shared desk space with power and wireless hookup, as well as separate general meeting space, is available on the third floor of Carruthers Hall to MPH students during their program and to first year MSc students. Students are required to have their own computers. Upper year research students who are working on their theses typically arrange appropriate work space through their thesis supervisors. Photocopy, fax, and office supplies are provided on a cost-recovery basis. A computer with statistical software installed is available for general use in the student common room. SAS student licences are provided through the department. SAS and SPSS student licences are also available for free download through Queen's Information Technology Services (ITServices).

Degree Program

The graduate program is administered under the rules and regulations of the School of Graduate Studies and applicants are accepted under these general regulations.

Master of Science Degree Requirements

The Department offers a two-year program of full-time study that requires students to successfully complete four mandatory core courses and two elective courses. As well, students must complete an online course on research ethics and prepare and satisfactorily defend a thesis. Required core courses focus on basic epidemiologic and biostatistical methods. Required elective courses generally focus on more specialized methods that may be necessary to conduct a particular thesis project.

Opportunities to develop or deepen content knowledge in a health or disease area are available through an independent study course, or through courses offered in other departments.

Under the direction of supervisors, students will identify a relevant research topic, prepare and present an outline, then a more detailed research proposal. Normally, the proposal would include a statement of the study purpose, the rationale for conducting the research, a statement of the student's unique and significant intellectual contribution to the research, the study design and data collection methods to be used, a description of the data management and analysis strategies, ethical implications of the study, and the theoretical or practical benefits of the project. Once the proposal is presented to the Department, approved, and receives ethical review and approval from Queen's

University, the student will conduct the study, then write and orally defend the results. The outline is to be submitted by the end of February of the first year of study; the proposal written and approved by the end of July of the first year of study; and the thesis submitted for defence by the end of August in the second year of study.

Master of Science Degree (Biostatistics Collaborative Program) Requirements

The Department, in conjunction with the Department of Mathematics and Statistics, offers a twelve month, non-thesis based program of full-time study that requires students to complete 8 term courses (six mandatory courses and two electives) and a practicum. The practicum will involve a four month placement working on a project pertaining to some aspect of biostatistics applications or methodological research affiliated with the work of the supervisor. Students must write a report on their practicum and make a presentation to an examining committee by late August of their year.

Master of Public Health Degree Requirements

In a professional course-based degree, MPH students develop their capacity to lead Evidence-Informed Action for Public Health by building a solid foundation in public health theory, methods, skills and competencies.

The 16-month MPH is comprised of:

- 9 courses - 6 mandatory core and 3 elective
- 400 hour practicum placement in a supervised setting
- 36 hours of public health skills workshops
- Short online tutorial in Human Research Ethics

The 12-month Accelerated MPH is available for applicants with at least two years of cumulative paid work experience in health care, public health, or a related field. Work experience may include two years of accredited residency through the Royal College of Physicians and Surgeons of Canada.

The 12-month Accelerated MPH is an intensive program that requires carrying a load of four courses in each semester. The 12-month Accelerated MPH is comprised of:

- 8 courses – 6 mandatory core and 2 elective
- 400 hour practicum placement in a supervised setting

- Short online tutorial in Human Research Ethics

PhD Degree Requirements

The Department offers a four year program of full-time study that requires students to take and pass one half course in advanced biostatistics EPID-823*(Winter term of first year) and one full course in advanced research methods EPID-901 (Fall and Winter terms of first year). Ph.D. students who have already taken one half course in advanced biostatistics as part of the M.Sc. program in Epidemiology at Queen's University, may be exempt from the advanced biostatistics courses requirement.

Each doctoral level course will have prerequisites from among the Queen's Master's level courses (or equivalents from other Universities). Therefore, students entering Doctoral studies in epidemiology who do not have Master's degrees in epidemiology may be required to meet appropriate pre-requisite requirements prior to enrolling in PhD coursework, as determined by the Ph.D. Program Committee. In addition to required courses, students may be encouraged to take additional elective courses, as deemed appropriate by their Supervisor. Students should normally expect to complete formal course work within eight to twelve months of admission into the program. In addition, informal sessions can be arranged to help students prepare for comprehensive examinations.

All Doctoral students must pass a Comprehensive Exam. Students will be evaluated for their in-depth knowledge in theoretical and applied epidemiologic and biostatistical methods; and, theoretical and applied knowledge in their area of specialization.

To assist in preparing for the examination, students will be provided with a recommended reading list of key texts. They will be expected to prepare for the comprehensive examination mainly through self-directed study, although informal sessions to aid preparation can be arranged and faculty consultation will be encouraged.

The exam will usually take place after all coursework has been completed in June of the first year of study. It will contain a written and an oral component. Specific content and format will be determined by a Comprehensive Examination Committee.

All Doctoral students must complete a research project that culminates in a dissertation that is based on original research of publishable quality.

DOCTOR OF SCIENCE IN REHABILITATION AND HEALTH LEADERSHIP (DSC RHL)

Program Overview

The Doctor of Science in Rehabilitation and Health Leadership (DSc RHL) is a 36 month executive-style program that allows its students to continue working while completing the degree, through a blend of on-campus intensive sessions and online-learning. The DSc (RHL) equips currently practicing rehabilitation and health professionals with the knowledge and skills they need to confidently pursue career opportunities that require advanced competencies in leadership, program development, applied research and evaluation, advocacy, change management, and knowledge translation.

Programs Structures and Admission Requirements

There are two routes of entry into the DSc (RHL) program:

1. **Master's degree** with a minimum of one-year work experience in a setting that develops, implements or manages programs, services, policies or processes for people affected by or at risk of a disability and evidence of progressive involvement in leadership activities or roles as evidenced in a curriculum vitae and through letters of reference

   OR

2. **Bachelor's degree** (four-year undergraduate program or equivalent) with a minimum of 5 years work experience in a setting that develops, implements or manages programs, services, policies or processes for people affected by or at risk of a disability and evidence of progressive involvement in leadership activities or roles as evidenced in a curriculum vitae and through letters of reference.

For both routes of entry, admission standards will be B+ average or above for previous degree(s). The program does not stipulate specific degree(s) for entry, recognizing that many different disciplines contribute to the fields of rehabilitation and health, and focus on supporting people affected by or at risk of disability.

Students entering with a Master's degree will complete a total of 5 required (core) courses (15 credits), 2 electives (6 credits), a comprehensive exam, and an applied

dissertation. Students entering with a Bachelor's degree will complete one additional core course.

For more information: https://rehab.queensu.ca/academic-programs/dsc

REHABILITATION SCIENCE

Vice-Dean (Health Sciences) and Director
Finlayson, M.

Associate Director, Research and Post-Professional Programs
Norman, K.

Professor
Brouwer, B., Finlayson, M., Hopkins-Rosseel, D., McColl, M.A.H., Pedlar, D.

Associate Professor
Deshpande, N., Donnelly, C., Lysaght, R.[1], Norman, K., Parsons, T., Pelland, L.,Trothen, T.

Assistant Professor
Aldersey, H.[2], Auais, M., Batorowicz, B., Booth, R., Cramm, H., DePaul, V., Fayed, N., Ghahari, S., Jull, J., Kessler, D., Miller, J.

Professor Emeritus
Culham, E., Krupa, T., Olney, S.J., Paterson, M.

Adjunct Professor
Aiken, A., McLean, L.

Adjunct Associate Professor
French, S., King-VanVlack, C.E.

Adjunct Assistant Professor
Bisson, E.,Fucile, S.,Gilchrist, I., Woodbury, G.

Adjunct Lecturer
Delaney, L., Edgelow, M.M., Law, M.

Continuing Adjunct Lecturer
Leverette, G., Murphy, S.

Cross-Appointed
Bona, M., Costigan, P.A., Davies, C., Dhavernas, C., Medves, J., Muscedere, J., Pukall, C., Puxty, J., Stockley, D., Stuart, H., Woo, K.

1 - On leave January-June 2019
2- Queen's National Scholar Community Based Rehabilitation

Departmental Facilities

The School of Rehabilitation Therapy is housed in the Louise D. Acton building. The Skills Laboratory and Seminar Room are located in the basement. Administration and faculty offices are on the second floor. Research laboratory facilities are located in the LDA building, Botterell Hall and Kingston Health Sciences Centre. Laboratories are well equipped to support various research programs in the study of normal and abnormal human movement, motor control, human neurophysiology and cardiovascular and skeletal muscle function. Research may also be undertaken in a variety of affiliated clinical and community settings external to the School of Rehabilitation Therapy.

Financial Assistance

Graduate students are expected to apply to the external granting agencies for fellowships available to them. Thereafter they will be considered, without further application, for Queen's Fellowships. Graduate students may receive support from grants held by members of faculty, or from departmental funds. Teaching assistantships are available to suitably qualified candidates.

Admission Requirements

Admission to the M.Sc. program is limited and is normally based, at a minimum, on an upper second class standing (B+) in a degree equivalent to an honours undergraduate degree in a discipline related to rehabilitation science (e.g. physical therapy, occupational therapy, kinesiology, sociology, psychology, life sciences, engineering, etc.) and awarded by a recognized university.

Admission to the doctoral program is limited and is normally based on high academic standing after the completion of a Master's degree in rehabilitation science, physical or occupational therapy, or in a related field.

Programs of Study

Applicants for both the Master's and Doctoral programs in Rehabilitation Science are accepted under the general regulations of the School of Graduate Studies.

Master of Science

Students are normally enrolled full time for two years and are required to follow a program of study within the framework of Program Pattern I of the School of Graduate Studies which requires as a minimum:

1. Course credits: A total of 12 course credits are required for degree completion. There are two required 3 credit hour courses (RHBS-833* Research Methods I and RHBS-804* Rehabilitation Science). Students may complete their credit requirements through taking a combination of 1.5 and 3.0 -credit courses offered through the School, or 3.0 credit courses offered through other departments. Selection of courses is subject to departmental approval. The student must obtain satisfactory standing in all courses.
2. Research and Thesis: The student must prepare a written research proposal and present the proposal to an advisory committee and to their peers. The student must also prepare a satisfactory thesis and successfully defend it.

The program is designed to provide course work in:

a. A general theoretical review of the field of rehabilitation science.
b. Research skill development.
c. Focused areas within the field of rehabilitation science.

Students will normally follow a program of study which requires as a minimum:

Core Courses (2): RHBS-833* *Research Methods I* and RHBS-804* *Rehabilitation Science*.

Evaluation/Application Courses: A minimum of six additional course credits selected from the calendar listings. Note that a minimum enrolment may be required for some courses. Where appropriate, a course may be offered as an independent study if the minimum enrolment is not met.

Thesis: RHBS-899 Master's thesis research.

Seminars: RHBS-803 Seminar Program
This non-primary course is obligatory for all M.Sc. students and includes attendance at all seminars, thesis proposal presentations and open defenses that take place within the School of Rehabilitation Therapy.

Doctor of Philosophy

The Ph.D. program will normally involve three to four years of full-time study. The program involves:

1. **Coursework:** Students entering the program from other universities or disciplines must take RHBS-933 Research Methods and RHBS-904 Rehabilitation Science plus three additional elective credits. Students entering the program from the M.Sc. program in Rehabilitation Science must take only three elective credits. Elective credits should be selected with the guidance of the student's supervisor and may be taken within the department as one 3.0 credit course or two 1.5 credit courses, or outside the department depending on the area of research focus of the student.
2. **Comprehensive examination:** Ph.D. students are expected to successfully complete their comprehensive examination within the first five academic terms of their program.

   The comprehensive examination is a means of ensuring that all graduates of our doctoral program:

   1. Master the breadth and depth of knowledge related to Rehabilitation Science
   2. Are able to formulate and defend arguments based on critical appraisal of the research evidence within the rehabilitation science literature
   3. Integrate and situate knowledge generated in the rehabilitation science field more broadly, such as within the health sciences community and society in general
   4. Are able to competently discuss how different techniques of inquiry are used to create knowledge in the field of rehabilitation science.
   5. Apply their knowledge to critically appraise basic, clinical and applied research relevant to their research area
   6. Make informed judgments on the application of appropriate research methodologies to their research area
   7. Demonstrate a sound understanding of the scope, perspectives, concepts, current issues and research methods relevant to their area of study.

   Students will demonstrate that they are well prepared to pursue original research in Rehabilitation Science at the doctoral level.
   The examination will comprise 2 parts:

A. An examination with written and oral components that will test the student's knowledge in Rehabilitation Science in general, research methods used in rehabilitation science, and in the area of the student's research focus; and
B. Submission of a written thesis proposal and oral defense of this proposal in front of a proposal examination committee.

3. **Thesis requirement:** RHBS-999 Doctoral Thesis Research
4. **RHBS-903 Seminar Program:** This non-primary course is obligatory for all Ph.D. students and includes attendance at all seminars, thesis proposal presentations and open defenses (Ph.D.) that take place within the School of Rehabilitation Therapy, attendance and participation in journal club, and delivery of two lectures within the M.Sc.(P.T.) or M.Sc.(O.T.) programs.

For more information: https://rehab.queensu.ca/academic-programs/rhbs

The School of Rehabilitation Therapy also offers graduate programs in Occupational Therapy, Physical Therapy, Aging and Health, and Rehabilitation and Health Leadership.
For more information: https://rehab.queensu.ca/academic-programs/

RELIGIOUS STUDIES

Acting Director
Young, P.D..

Graduate Coordinator
Young, P.D.

Professor
Ascough, R.S., Morrow, W.S., Trothen, T.J.,Young, P. Dickey

Associate Professor
Goldberg, E., Jahanbakhsh, F.

Assistant Professor
Mosurinjohn, S.C., Xavier, S.

Departmental Facilities

The School of Religion is housed on three floors of Theological Hall, one of the oldest buildings on the campus of Queen's University. This space includes seminar rooms, lounges, and offices. Our main office is located on the second floor.

The Stauffer Library, which is just a short walk away, has substantial holdings in religious studies, and is continually being augmented with a strong acquisitions policy.

In addition, Theological Hall houses a semi-public computing site.

Field of Research

Our faculty are dedicated to the academic study of religion, and are available to supervise research on a wide range of topics, cultures, traditions, and historical periods.

Graduate Student Support

The university offers a number of Queen’s Graduate Awards, senior fellowships, and other financial support for students in our Master's program.

Departmental Teaching and Research Assistantships are awarded to suitably qualified students.

Graduate students are also encouraged to apply for additional funding through the annual Ontario Graduate Scholarships (OGS) and Social Sciences and Humanities Research Council (SSHRC) competitions.

Master of Arts

Applicants to our program will be accepted according to the General Regulations of the School of Graduate Studies.

Normally, the minimum qualification for admission to the Master of Arts Program in Religious Studies is upper second-class standing in a four-year Honours undergraduate degree program in Religious Studies, or equivalent, awarded by a recognized university.

The course requirements for our program are 24.0 units of study, which include our core courses (RELS 801/3.0 units and RELS 802/3.0 units) and the final research essay (RELS 898/6.0 units).

Of the remaining 12.0 units of study, a minimum of 3.0 units must be taken from our list of Elective courses, and a maximum of 6.0 units can be taken from our list of Reading courses. In any case, a minimum of 6.0 units must be taken from our list of RELS courses (Elective and Reading) offered in a particular year.

With approval from the Graduate Coordinator, a maximum of 6.0 course units may be taken from another cognitive department.

Students who have not completed the equivalent of Queen's University course RELS 354 (Theory in Religious Studies) will be required to take RELS 854 <u>in addition to</u> the required 24.0 units of study.

Language Requirement

Before completing the M.A. degree, students are required to give evidence of a reading knowledge of at least one language, other than English, elected from the languages of modern scholarship and/or necessary source languages. Normally, this requirement will be satisfied by undergraduate standing in one full course (6.0 credit units), Ontario Academic Credit, or the equivalent.

SOCIOLOGY

Head
Burfoot, A.

Coordinator of Graduate Studies
Hand, M.

Professor
Baron, S.B., Beamish, R.B.[1], Burfoot, A., Kay, F., Lyon, D.[2]

Associate Professor
Day, R., Hand, M., Levine-Rasky, C., Murakami-Wood, D., Srivastava, S.

Assistant Professor
Abrams, T.J., Möellers, N.T., Myers, N.M., Sytsma, V.A.

Professor Emeritus
Hamilton, R., Lele, J.K., Mosco, V., Pearce, F., Pike, R.M., Sacco, V., Silverman, R., Snider, L., Zureik, E.T.

Cross-Appointed
Adams, M.L., Goebel, A., Jefremovas, V., Sismondo, S., Soederberg, S.,Taylor, M.E.

1 - On Administrative Leave July 2018-June 2019
2 - On Academic Leave January-June 2019

Departmental Facilities

The University Computing Centre provides a complex of the most modern computer equipment, and instructional assistance in its use. The Department of Sociology has its own computer lab for Sociology graduate students in Mac-Corry D432.

The Stauffer Library contains a well-developed collection of nineteenth, twentieth and twenty first century Canadian books, newspapers, periodicals and government documents. It subscribes electronically to most major journals.

The United Nations Documents Library contains the reports of many international bodies. The Law Library and the Health Sciences Library have substantial collections pertinent to the sociological study of these areas.

Resources in Gender Studies include library holdings of over 5,000 volumes. The Ban Righ Foundation provides weekly programs and serves as a resource centre for women.

Students in Sociology can draw upon the resources of the many professional Faculties and Schools which are at Queen's including Law, Medicine, Education, Kinesiology and Health Studies, Policy Studies, Environmental Studies, Urban and Regional Planning, Public Administration, Business, and the Industrial Relations Centre.

These cooperative relationships, together with a provision that enables students to take courses in other departments within the Faculty of Arts and Science, provide the opportunity for interdisciplinary scholarly work. The Department houses an interdisciplinary group that is supported by a SSHRC-funded project on surveillance and Information and Communication Technology.

Fields of Research

The program reflects the special expertise of the staff and utilizes the unique facilities offered by the Kingston community. The program reflects the special expertise in the following areas:

- Critical Sociological Theory, including Marxism and Critical Race Theory
- Deviance and Criminology (especially among young offenders)
- Feminist Sociology
- Social Movements
- Sociology of Cities and Urban Sociology
- Sociology of Law
- Sociology of Sport
- Cybersecurity and Surveillance
- Science and Technology Studies
- Visual Culture
- Research Methods

The Graduate program is divided into three fields:

- Power, Inequalities and Social Justice;
- Criminology and Law;

- Media, Information and Surveillance.

Financial Assistance

Successful candidates are guaranteed annual funding for up to 2 years for Master's students and up to 4 years for Ph.D. students. Master's students receive a minimum of $14,000 for years 1 and 2 of their program and Ph.D. students receive a minimum of $21,000 for years 1 to 4 of their program.

Programs of Study

Graduate students are accepted under the general regulations of the School of Graduate Studies.

Master of Arts

The Department offers a program of study leading to the Master of Arts degree. Most students take between 18 and 24 months to complete the program. Students also have the option of completing the program in twelve months but should discuss this with the Graduate Coordinator upon arrival.

The M.A. program offers students a choice of two alternate programs:

i. SOCY-901* and SOCY-902* and two term-length graduate courses normally to be taken in the first two terms of the program, and a thesis weighted at one-half of the total program which must be successfully defended. The thesis normally does not exceed 25,000 words and is scheduled to be undertaken after the course work is completed.
ii. SOCY-901* and SOCY-902* and four term-length courses normally to be taken in the first two terms of the program, plus an essay of between 10,000 and 12,000 words, weighted at one-quarter of the total program, which is normally to be undertaken after the course work is completed.

The essay is intended to demonstrate the capacity for critical and analytical research by reflecting the state of scholarship in a given area. The essay will be marked by the supervisor and by a second reader. The second reader will be a member of the Department, chosen by the Supervisor in consultation with the Head of the Department.

Doctor of Philosophy

Applicants are accepted under the general regulations of the School of Graduate Studies.

The doctoral program comprises required course work in sociological theory and methods plus courses selected in one of the department's specialization: socio-legal studies, communication and information technology, feminist sociology or critical sociological theory; an oral qualifying exam, a written qualifying exam and successful defense of a thesis.

Coursework

Doctoral candidates will normally take a minimum of four single-term courses in their first year. SOCY-901* and SOCY-902* (or their equivalents) are normally compulsory. However, if the Coordinator of Graduate Studies decides that the student's earlier work corresponds to materials covered in SOCY-901* and SOCY-902*, alternative courses will be substituted (see below).

Students with an M.A. from Queen's who have already taken SOCY-901* and/or SOCY-902*, or those determined to have taken its equivalent, will be required to take other graduate courses in theory and methods offered by the department at the time; or to take appropriate courses in theory and/or methods as Directed Special Readings; or (with the approval of the Graduate Coordinator and the Supervisor) appropriate courses in other departments.

In addition, at least one single-term course in the student's area of specialization must be taken.

With the recommendation of the Supervisor and the Graduate Coordinator, courses may be taken outside the Department.

In addition to the preceding requirement, SOCY-900*, Professional and Pedagogical Skills, is a compulsory course (graded pass/fail).

Qualifying Examinations and Thesis Proposal Exam

By the end of the third term each student, in consultation with the Coordinator of Graduate Studies, must choose a supervisor and up to two other faculty members from the Department to make up the Supervisory Committee. The faculty members on the Supervisory Committee will monitor the student's work towards completion of the dissertation.

By the end of the fifth term students must submit to their S upervisory Committee a written dissertation proposal. This proposal will be assessed in the context of a more general qualifying examination. The Qualification Examination Committee will consist of the student's supervisor and at least one of the other members of the Supervisory Committee, an internal/external examiner, the Head or delegate, and a Chair appointed by the Head (the Head can also serve as Chair).

This examination will be in two parts. The first is a one-week take-home written examination focusing on the relevant theoretical, methodological and substantive areas germane to the student's program. The second is an oral examination, approximately two hours in length, one to three weeks following the written exam, which focuses on the thesis proposal. The possible results of the oral exam are Pass, Refer or Fail. Both parts of the exam will test the student's understanding of the discipline, the viability, scope and coherence of the thesis proposal and the preparedness of the candidate to undertake the proposed research.

Dissertation

General procedures concerning the doctoral dissertation required of all candidates for the Ph.D. are defined in this Calendar (Thesis). The writing and final defense of the dissertation before an Examining Committee will proceed according to the regulations of the School of Graduate Studies.

STATISTICS

Professor
Levit, B., Thomson, D.J.

Associate Professor
Jiang, W., Lin, C.D., Takahara, G.K.

Cross Appointed
Chen, B., McIsaac, M., McLellan, P.J., Peng. P., Tu, D.

Facilities

The Department of Mathematics and Statistics is located in its own building, Jeffery Hall, and this building also houses most of the facilities associated with the department. A large number of networked public computers and workstations are located in Jeffery Hall and provide students and staff with ready access to standard computing software and to the Internet.

Areas of Research

A detailed summary of the current research interests of our faculty is available on our website (http://www.mast.queensu.ca/grad.html).

Programs of Study

The Department offers Master's degrees under both the thesis and project patterns (Patterns I and II of General Regulations, section Structure of Graduate Degree Programs) and Doctoral degrees.

A student beginning a Master's degree usually has already taken a post-calculus course in statistical theory. Students who lack sufficient background in this area may be required to take an undergraduate course at the beginning of their graduate studies.

Refer to the Mathematics and Statistics program of study section of this calendar for complete details on the requirements for the Master's and Doctoral degrees.

Courses in Statistics and Probability

Refer to the Mathematics and Statistics course section of this calendar for the list of courses in statistics and probability.

TRANSLATIONAL MEDICINE

Graduate Program Director
James, P.

Professor
Archer, S.L., Baranchuk, A., Brundage, M., Dancey, J., Ellis, A., Lougheed, D., O'Donnell, D., Paterson, W., Redfearn, D., Simpson, C., Vanner, S.

Associate Professors
Boyd, J.G., Gill, S., Hay, A., Holden, R., Johri, A., Moran-Mendoza, O., Petrof, E., White, C.

Assistant Professor
Flemming, J., Glover, B., Maslove, D., Ormiston, M., Reed, D.

Professor Emeritus
Anastassiades, T., Pater, J.L.

Cross-Appointed Faculty
Baetz, T., Lillicrap. D.P., Maurice, D., Parulekar, W.

Areas of Research

Translational Medicine is driven by our patients and their diseases. Guided by this primary focus, translational research spans across the spectrum from molecular and cell biology to preclinical models to patient studies and back again. Our research operates at the intersection of clinical and related sciences and will generate and lead discovery through an integrated process, increasing the efficiency of translating science knowledge into health improvement. The areas of research include, but are not limited to: Inherited Bleeding Disorders and Molecular Hemostasis, Gastrointestinal Motility Disorders, Regenerative Cardiovascular Medicine, Pulmonary Hypertension, Vascular Disease in Chronic Renal Failure, Allergy/Immunology, Cancer and Cancer Clinical Trials, Neurologic Outcomes after ICU Admission, Atherosclerotic Heart Disease, Cardiac Arrhythmias, Sleep Apnea, and Chronic Obstructive Pulmonary Disease.

Facilities

Most students will be housed within the research space of their supervisor. Translational Medicine facilities are located in QCPU (Queen's Cardiopulmonary Unit), GIDRU (Gastrointestinal Disease Research Unit), Etherington Hall, Botterell Hall, and Kingston Health Sciences Centre.

Programs of Study

MSc in Translational Medicine (duration: 24 months)

The Master of Science (MSc) in Translational Medicine requires, at minimum, the completion of 12 credit units, including three new core courses in translational medicine (TMED 800, 801, & 802) and 3-credits in elective course(s) chosen from students' area of interest, and a thesis research project. Students registered in the MSc in Translational Medicine with first-class standing (a minimum A- average, equivalent to 3.7 GPA or 80%), and who show exceptional promise in their research may be considered for promotion to the PhD in Translational Medicine, without completion of the MSc.

PhD in Translational Medicine (duration: 48 months)

The Doctor of Philosophy (PhD) in Translational Medicine has the same coursework requirements as the MSc such that students who have completed the MSc in Translational Medicine will be granted advanced standing and have no further coursework to complete thus providing an accelerated route to PhD completion. The PhD program also requires completion of a comprehensive exam and thesis research.

Financial Assistance

Graduate students are encouraged to apply for financial support in the form of fellowships and studentships from external granting agencies. Departmental policy ensures a minimum stipend support for graduate students. Students enrolled in the programs will receive funding packages to assist with living expenses and coverage of tuition: MSc – minimum $21,000 per year for 2 years; PhD – minimum $23,000 per year for 4 years.

URBAN AND REGIONAL PLANNING

Director
Viswanathan, L.

Professor
Gordon, D.L.A. [2]

Associate Professor
Agarwal, A., Collins, P., Meligrana, J.F., Viswanathan, L., Whitelaw, G.S. [1]

Professor Emeritus
Leung, H-L., Qadeer, M.A, Skaburskis, A.

Cross Appointed Faculty
Anderson, B.C.

Continuing Adjunct Assistant Professor
Andrew, J.S.

Adjunct Associate Professor
Bray, C.

Adjunct Assistant Professor
Streich, P.A.

Adjunct Lecturer
Agarwal, S., Cumming, S., Gkotsis, T.

1 - On Leave July 1, 2018-December 31, 2018
2 - On Leave January 1, 2019-June 30, 2019

Facilities

The School of Urban and Regional Planning is a unit within the Department of Geography and Planning. Located in Mackintosh-Corry Hall, the School of Urban and Regional Planning is close to the social sciences complex, Stauffer Library, the John Deutsch University Centre, and the recreation facilities of the Athletics and

Recreation Centre. Adjacent departments include Policy Studies, Industrial Relations, Economics, Sociology, Global Development Studies and Political Studies, as well as the Faculties of Business and Law.

Staff offices, seminar rooms, student study rooms, and project rooms are situated together, thereby fostering interaction among all members of the School. Usually, full-time students are provided with individual study spaces with direct connections to the internet for laptop and desktop computers. The School has a network printer, a scanner, and a wide variety of software for wordprocessing, Internet browsing, presentation graphics, spreadsheets, database management, advanced statistical analysis, computer aided design, and geographic information systems. For more complex projects students can access the Department's GIS laboratory and a number of other campus computing centres. Every student office is directly connected to the Internet by the University's fibre-optic network and the University’s wireless network. The University also provides students with electronic mail accounts and personal web pages.

Stauffer Library has a substantial collection of government (including municipal) documents, maps and aerial photographs, atlases and economic and business texts and materials. Several digital databases and a digital map library are maintained at the Social Science Data Centre. The adjacent Engineering Library and the Law Library also contain planning texts and journals and are available for use by the School.

Financial Assistance

Students in the School of Urban and Regional Planning are eligible, in competition with students in other schools and departments, for many scholarships, awards and bursaries available at Queen's. Specific information on these and other awards is available upon request. A successful internship program has been placing students in paid, professionally-related positions during the summer term.

Fields of Interest

The School offers a program of professional studies in the planning and development of cities and regions. It attempts to relate its academic activities to current public policy concerns and professional planning as well as management issues. Presently the research interests being pursued in the School include land use planning, real estate and land information management, environmental and infrastructure services, sustainable development, housing studies, urban redevelopment, neighbourhood planning, planning implementation, management and programming of human services,

municipal finance, metropolitan spatial structure, urban transportation, planning history, social planning, healthy communities, planning ethics, equity, cultural diversity, and studies of planning practice. Research and professional practice constitute significant elements of the School's academic program and students are fully involved in them.

Program of Study

The program of study for the master's degree in Urban and Regional Planning (M.PL.) extends over two years. An internship in the spring/summer term between the two years is possible.

Also currently offered are combined degrees (BA/MPL; BSc/MPL) with other Queen's University programs including Civil Engineering, Geography, Environmental Studies, and Kinesiology and Health Studies. The current procedure is that first-class students are invited to apply to the accelerated pathway in their third year or in the first term of fourth year. These applications are reviewed by the admissions committee of SURP and qualified students are formally permitted to take MPL graduate courses as part of their undergraduate program. Please contact the School for further information.

The program provides a core of 24 credit units and an additional 24 credit units of electives or research, for a total of 48 credit units over a two-year period. Included in the core is one of the planning project courses (6.0 credit units), which should be related to the designated area of concentration. The core courses introduce theories and methods common to all fields of urban and regional planning. Almost all courses emphasize linking theory with action. Within the elective component of the program, each student will designate an area of concentration from the three specializations offered by the School, namely, i) Health and Social Planning, ii) Environmental Services, and iii) Land Use and Real Estate Development. Alternatively, a student also has the option of setting up a special area to pursue professional interests. In each case, the area of concentration will normally consist of at least 6.0 credit units, approved by the faculty advisor, from the offerings of the School or cognate disciplines, plus at least 3.0 credit units in methodology course modules. Beyond the area of concentration a student will have an opportunity to pursue other academic and professional interests, with the approval of the faculty advisor, through the remainder of the electives, which may include up to 6.0 credit units from the undergraduate 300 and 400 series.

The core courses are indicated by a (†). These have been arranged to form a coherent program of study appropriate to urban and regional planning. Students may also pursue a research project in considerable depth through the medium of a master's

report or thesis. Both these projects are research-oriented, and their difference lies essentially in the degree of elaboration and evaluation required. A master's report is considered to be equivalent to 6.0 credit units and the thesis to 12.0 credit units. Students who wish to pursue the report or thesis option must find a research supervisor prior to commencing the second year of the program and are required to successfully complete the SURP-800 Master's Research Proposal module at the beginning of second year.

Students are required to maintain an average of 'B' at all times in their programs. All courses offered by the School are to be designated primary for which a passing grade is 'B-' (B minus). Only primary courses can be counted towards the minimum program requirement. Courses (graduate and undergraduate) from outside the School may be taken in fulfillment of program requirements, but these have to be approved by the advisor and designated as primary. For students who would like to take courses (graduate or undergraduate) outside the School to enhance their program over and above the minimum requirements, they can designate these elective courses as secondary. A maximum of two secondary courses is allowed, with the advisor's approval. A secondary course is considered passed with a 'D-' (D minus) grade, and an overall 'B' average must be maintained.

For further information on the School and its program visit our website at http://www.queensu.ca/geographyandplanning/surp. Students interested in doctoral studies with research topics in urban and regional planning should consult the Geography and Planning Ph.D. requirements in this calendar.

M.PL. Internship Program

The M.PL. Internship Program provides students with the opportunity to combine academic studies with on-the-job experience. Students participating in the M.PL. Internship Program will normally complete a paid four-month placement with a government department or other organization, following the completion of at least two terms of study in the M.PL. Program. Students taking an internship position must register in SURP-893* Internship. Although the School cannot guarantee every student an internship placement, the School is committed to working with public sector and other employers to place students in appropriate learning environments.

HISTORY OF GRADUATE WORK

Graduate work at Queen's University at Kingston was established formally in 1889 with the adoption of regulations for the Ph.D. and D.Sc. degrees. At that time the degree of M.A. was not a graduate degree, but was given on the completion of honours work in certain courses provided the candidate had first class standing. With the introduction of a new system of studies in 1919, however, a graduate program was set up requiring a year of work beyond the B.A. and prescribing advanced lecture courses and a thesis or other piece of independent work. In 1926 the master' s course was strengthened by making the Honours B.A., or its equivalent, with at least second class standing, the standard of admission, and the regulations stated that the degree was to be given "not on the grounds of general attainment, but in recognition of the candidate' s wide knowledge of a special field of study."

The degree of M.Sc. was given for the first time in 1905-06. Graduates holding the bachelor' s degree could qualify for the M.Sc. by practicing engineering for two years or spending one year at the university. In 1922-23 a formal course was set up and one year of attendance beyond the B.Sc. was required. Strong emphasis was placed on the research and thesis.

The establishment of the Chown Science Research Chair in 1919 and the Miller Memorial Research Chair in 1929 did much to stimulate graduate work in the Departments of Physics, Chemistry, Geology, and Mineralogy, increasing the number of graduate students in these fields.

The administrative aspect of graduate work was first formalized by the Faculty of Arts which set up a Committee on Graduate Studies in 1941. In 1943, the Senate constituted the Queen’s University Board of Graduate Studies. This was reconstituted into the School of Graduate Studies in 1963 and expanded to include the research component in 1971. In 1990, the increasing importance of research led to the creation of a joint position of Dean of Graduate Studies and Vice-Principal (Research). This continued until 1995, when a separate portfolio of Vice-Principal (Research) was established.\

The School of Graduate Studies and Research name reflected the jurisdictions over which the graduate school had responsibility and authority when it was established. Following the creation of the Vice-Principal (Research) portfolio, the responsibility for all aspects of the research enterprise, exclusive of graduate student research, was moved to the VPR. In the interests of providing clarity and being accurate, the SGSR

was renamed the School of Graduate Studies as part of governance changes approved by Senate in February 2009.

In November 2007, the position of Dean, Graduate Studies and Research, was expanded to include the responsibilities and title of Associate Vice-Principal and Dean, Graduate Studies and Research (now, AVP/Dean, SGS) to reflect the university wide scope of graduate education at Queen's.

PAST ADMINISTRATORS

DEANS, SCHOOL OF GRADUATE STUDIES AND RESEARCH
1963-1964 - Dr. J.M.R. Beveridge, Head, Biochemistry Department
1964-1968 - Dr. C.A. Curtis, Head, Economics Department
1968-1970 - Dr. D.W. Slater, Professor, Economics Department
1970-1979 - Dr. R.L. McIntosh, Professor and Former Head, Chemistry Department
1979-1984 - Dr. M. Yeates, Professor and Former Head, Geography Department
1984-1989 - Dr. D.T. Canvin, Professor and Former Head, Biology Department

VICE PRINCIPAL (RESEARCH) AND DEAN, SCHOOL OF GRADUATE STUDIES AND RESEARCH
1989-1995 - Dr. Wm. McLatchie, Professor, Physics Department

DEANS, SCHOOL OF GRADUATE STUDIES AND RESEARCH
1995-2000 - Dr. R.J. Anderson, Professor and Former Head, Mechanical Engineering Department
2001-2006 - Dr. U. Scheck, Professor of German Language and Literature

ASSOCIATE VICE-PRINCIPALS AND DEANS, SCHOOL OF GRADUATE STUDIES
2007-2010 - Dr. J.M. Deakin, Professor of Kinesiology and Health Studies

VICE-PROVOSTS AND DEANS, SCHOOL OF GRADUATE STUDIES
2010 - Dr. B. Brouwer, Professor of Rehabilitation Science

SESSIONAL DATES

For Sessional Dates for the Master of Occupational Therapy and Master of Physical Therapy programs, contact the School of Rehabilitation Therapy.

**For start and end dates of all sessions within the Summer Term, and applicable examination periods, please consult the specific department/program.*

JULY 2018

2	Canada Day holiday. (University Closed. Classes will not be held.)
3	Summer Term classes begin for part time M.Ed., M.Ed. (AWIES), GDPI & PME
6	Last date for Summer Term course changes for part time M.Ed., M.Ed. (AWIES), GDPI & PME programs without SGS approval
20	Summer Term classes end for the part time M.Ed., M.Ed. (AWIES) programs

AUGUST 2018

6	Civic Holiday (University Closed. Classes will not be held.)
13	Summer Term classes end* except for part time M.Ed., M.Ed. (AWIES), GDPI & PME programs
14-15	Summer Term pre- examination study period (TENTATIVE)
17	Summer Term classes end for GDPI and PME programs
31	Summer term ends*

SEPTEMBER 2018

1	Fall Term begins
3	Labour Day (University closed. Classes will not be held.)
10	Fall Term classes begin
28	Last date for reporting to School of Graduate Studies completion of degree requirements to make the Fall 2018 degree list
30	Fall term tuition fees, or fee payment arrangements, due for graduate students

OCTOBER 2018

5	Last date for course changes for the Fall 2018 term without SGS approval
8	Thanksgiving Day (University closed. Classes will not be held)
10	Last date to apply to graduate in Fall 2018
16	University Day (Classes will be held)

NOVEMBER 2018

9	Remembrance Day services (Classes cancelled 10:30-11:30 am.)
13-15	Fall 2018 Convocation
30	Fall Term classes end

DECEMBER 2018

1-4	Fall Term pre-examination study period
5-20	Fall Term examinations period (TENTATIVE)
6	Commemoration Day (All academic activity with the exception of clinical responsibilities and field work will be cancelled.)
31	Fall Term ends

JANUARY 2019

1	New Year's Day (University closed. Classes will not be held.)
1	Winter Term begins
7	Winter Term classes begin
7	International Student Orientation for Winter Term admissions
10	Winter Term tuition fees, or fee payment arrangements, due for graduate students
11	Last date to drop Fall-Winter (full year) courses without SGS approval

FEBRUARY 2019

7	Last Date for course changes for Winter Term courses without SGS approval
18	Family Day (University closed. Classes will not be held.)
19-22	Midterm Reading Week (not applicable to M.Sc. O.T. or M.Sc. P.T. programs)

APRIL 2019

5	Winter Term classes end
6-10	Winter Term pre-examination study period
11-27	Winter Term pre- examination study period (TENTATIVE)
19	Good Friday (University closed. Classes will not be held.)
30	Last date for reporting to School of Graduate Studies completion of degree requirements to make the Spring 2019 Degree list
30	Last date to apply to graduate in Spring 2019 (TENTATIVE)

MAY 2019	
1	Summer Term begins *
1	Summer Term tuition fees, or fee payment arrangements, due
6	Summer term classes begin *
20	Victoria Day (University closed. Classes will not be held.)
25	Last date for course changes for Summer Term courses without SGS approval
	NOTE: Spring 2019 Convocation dates to be determined in Fall 2018 and the finalized dates will be posted here: http://www.queensu.ca/registrar/convocation

JULY 2019	
1	Canada Day holiday (University closed. Classes will not be held.)
2	Summer Term classes begin for the part time M.Ed., M.Ed. (AWIES), GDPI and PME programs
8	Last date for Summer Term course changes for part time M.Ed. , M.Ed. (AWIES), GDPI and PME programs without SGS approval
19	Summer Term classes end for part time M.Ed. and M.Ed. (AWIES) programs

AUGUST 2019	
5	Civic Holiday (University closed. Classes will not be held)
12	Summer Term classes end* (except M.Ed. and M.Ed. [AWIES] programs)
14-15	Summer Term examinations* (TENTATIVE)
16	Summer Term classes end for GDPI and PME programs
31	Summer Term ends*

**For start and end dates of all sessions within the Summer Term, and applicable examination periods, please consult the specific department/program.*