

Department/Academic Unit: Pathology and Molecular Medicine

Degree Program: MSc

Degree Level Expectations, Learning Outcomes, Indicators of Achievement and the Program Requirements that Support the Learning Outcomes

Expectations (general descriptors from OCAV)	Learning Outcomes This degree is awarded to students who demonstrate...	Indicators of Achievement As evidenced by...	Relevant Courses and academic requirements (requirements that contribute to the achievement of learning outcomes and degree expectations)	Transferable skills (skills acquired that are relevant and applicable to multiple career paths)
Depth and breadth of knowledge	<p>A broad based appreciation of biomedical research focused on molecular, genetic and biological bases of human diseases with particular emphasis on cancer biology, genetics, vascular biology, cardiovascular disease and hemostasis.</p> <p>Awareness of current and developing approaches that inform clinical practise and development of improved methods of diagnosis and treatment including the trend toward “patient-tailored” treatment informed by molecular diagnostics.</p> <p>A general understanding of multiple molecular “omic” platforms (eg. genomic, epigenomic , proteomic) used in current approaches of disease diagnosis and investigations of the molecular basis of disease.</p>	<p>Successful completion of 2.0 credits worth of course work.</p> <p>Writing and successfully defending an MSc or Mini-Master’s thesis.</p> <p>Competing successfully for scholarship awards.</p> <p>Presentation of research findings at local, national and international scientific conferences.</p> <p>Publication of research findings in peer-reviewed scientific journals.</p>	<p>2.0 credits are required for the MSc degree:</p> <p>Mandatory courses: PATH827 – Research Project in Pathology (0.5 credit)</p> <p>PATH830 – Pathology and Molecular Medicine Research Seminar Series (0.5 credit)</p> <p>QACS799 – Introduction to Animal Care – mandatory for students conducting research involving animals (non-credit)</p> <p>SGS804 – Human Research Ethics (CORE) - mandatory online course for students conducting research involving human subjects (non-credit)</p>	<p>Written and oral communication skills.</p> <p>Ethical use of animals in research.</p> <p>Ethics of clinical trials.</p>

	<p>General knowledge of how clinical trials are developed and implemented.</p> <p>General understanding and appreciation of the use of trans-disciplinary research approaches.</p> <p>General appreciation of complexities associated with research knowledge translation into improved clinical practice.</p>		<p>Elective courses: PATH822 - Experimental Cancer Therapeutics (0.5 credit)</p> <p>PATH823 – Cancer Biology (0.5 credit)</p> <p>PATH826 – The Molecular Basis of Disease (0.5 credit)</p> <p>Elective courses from other departments may also be taken, depending upon student research interests and specifically required skill sets associated with individual research projects.</p>	<p>Rationale for development of novel therapeutics, including preclinical trials to identify and validate therapeutic targets, and determine mechanism of action of novel therapeutic agents.</p>
Research and scholarship	<p>A conceptual understanding of and methodological competence with established techniques of research; and use of these techniques to create, analyze and interpret data.</p> <p>The development of hypothesis supported by previous observations and design of experimental approaches to test that hypothesis; and presentation and interpretation of research findings in written</p>	<p>Incorporation of positive feedback from supervisor regarding hypothesis and experimental approaches/results during regular lab meetings or one-on-one meetings to refine approaches.</p> <p>Incorporation of positive feedback from faculty and trainees during question periods at regularly scheduled departmental</p>	<p>PATH827: Essays summarizing key research studies in their field of study, written research proposal and presentation to and defense of that proposal with supervisory committee.</p> <p>Mini-Masters: Written research proposal and presentation and defense of this to an examining committee in the context of</p>	<p>Oral and written communication skills, including “thinking on your feet” to explain and defend complex ideas.</p>

	<p>and oral forms.</p> <p>Development of skills to critically evaluate current research and scholarship in the specific area of research.</p> <p>Enables a treatment of complex issues and judgements based on established principles and techniques.</p>	<p>seminar presentations to refine approaches and presentations.</p> <p>Evidence of technical competence in the design and execution of experiments.</p> <p>Demonstrated ability to analyze, present and interpret data in a clear and concise fashion.</p>	<p>re-qualification into the PhD program.</p> <p>Writing and defense of MSc thesis; and writing and submission of manuscripts for peer-reviewed publications.</p> <p>Preparation of seminars and posters for presentations at scientific meetings in local, national and international venues.</p>	<p>Development of comprehensive documents in support of applications for funding.</p>
Application of Knowledge	<p>Competence in the research process by applying existing methods to generate data suitable to analysis of a specific problem or issue in a new setting.</p>	<p>Demonstrated competence in experimental methods and the integration of new approaches to address questions and problems about disease diagnosis and treatment.</p>	<p>PATH830; PATH827</p> <p><u>Presentations and participation at journal clubs.</u></p>	<p>Exposure to rapidly developing technology with opportunities to master and apply these methods.</p>
Professional capacity/autonomy	<p>Qualities and transferable skills necessary for employment training.</p> <p>Exercise of initiative and of personal responsibility and accountability, and decision-making in complex situations.</p> <p>The ethical behaviour consistent with academic integrity and the use of appropriate guidelines</p>	<p>Demonstration of critical thinking, independent inquiry and rational arguments in the context of supervisory committee meetings, departmental seminars and research proposal and thesis defenses.</p> <p>Demonstrated ethical</p>	<p>PATH827 – Research Project in Pathology -</p> <p>PATH830 – Pathology and Molecular Medicine Research Seminar Series –</p> <p>PATH822 - Experimental Cancer Therapeutics</p> <p>PATH823 – Cancer Biology</p>	<p>Development of self confidence in ability to learn and effectively apply complex experimental methods.</p>

	and procedures for responsible conduct of research.	behavior consistent with academic integrity and appropriate for the responsible conduct of research in the context of course work and thesis research activities.	<p>PATH826 – The Molecular Basis of Disease</p> <p>QACS799 – Intro to Animal Care</p> <p>SGS804 – Human Research Ethics (CORE) - mandatory online course for students conducting research involving human subjects</p>	Ability to assess the state of knowledge in a particular field and determine the potential of novel findings for practical applications.
Communication Skills	The ability to communicate information and ideas clearly and concisely in both written and oral formats.	Incorporation of positive feedback from supervisory committee members during regularly scheduled progress report presentations and departmental seminars to refine and improve communication skills.	<p>Departmental seminars; supervisory committee presentations; research proposal and thesis defenses; data presentations at scientific meetings.</p> <p>PATH830; PATH827</p>	Oral and written communication skills.
Awareness of limits of knowledge	Recognition and appreciation of the complexity of knowledge and of the potential contributions of other interpretations, methods, and disciplines.	Demonstration of critical thinking in the context of presentations and research results and discussion/defense of interpretations and conclusions.	<p>Mentoring by supervisor, other faculty, staff and other trainees.</p> <p>PATH830; PATH827</p>	Ability to think critically about research findings and consider potential applications of knowledge.