PSYC 302: Advanced Research Methods
Winter 2025
SEE onQ FOR LOCATION AND CONTACT INFORMATION

<u>Required Software:</u> SPSS 29 (free from Queen's ITS)

<u>Recommended Texts:</u>
Field, A., (2018). *Discovering Statistics Using IBM SPSS Statistics* (5th ed.). California: Sage Publications. YOU ALREADY HAVE THIS FOR PSYC301
Howitt, D., & Cramer, D., (2017). *Introduction to SPSS in Psychology* (7th ed.). United Kingdom: Pearson Education.
Abelson, R. P. (1995). *Statistics as Principled Argument.* Hillsdale, NJ: Laurence Earlbaum.
Pinker, S. (2014). *The Sense of Style: The Thinking Person's Guide to Writing in the 21st Century.* New York: Penguin
Tabachnick, B. G. & Fidell, L. S. (2012). *Using Multivariate Statistics.* New York: Pearson

****See also Excel file on onQ with list of free textbooks

Course Description.
  The primary purpose of this course is to prepare you to do an undergraduate thesis in PSYC501. That is, this course will give you both structure and self-directed opportunities to become an *independent researcher*. To do this, you will need to know how to write a proposal, one of the most important forms of scientific communication. To know how to write a proposal, you will need to know how to connect theory with research questions, research questions with hypotheses, hypotheses with study design, study design with measures, and measures with statistical tests. Statistically, we will cover the **concepts**, **procedures**, and **interpretations** of several multivariate methods. Ultimately, all material and experiences will **provide the resources you will need next year to successfully conduct your thesis project**.

<u>Learning Objectives</u>
By the end of the course, you will be able to:
1. Comprehend the basics of multivariate statistical methods
2. Utilize statistical resources to understand variations and extensions of these methods
3. Conceptually link research questions to appropriate methods
4. Write a coherent research proposal

I assume you already have a good grasp of univariate methods (e.g., t-tests, correlations) and issues so that we may delve into the issues that arise when you need to analyze two or more dependent and/or independent variables. After covering the basics of data cleaning and reduction, we will cover each of the three major multivariate method families: factor analysis, MANOVA, and regression. These three are mathematically related to each other and most other techniques can be understood as variations of these three. Weekly labs will focus on SPSS procedures as well as clarify issues from lecture and the homeworks.

Although statistics are based on mathematical formulas that represent the relationships among variables, the intent of this course is to focus on statistics as a means of principled argument (Abelson, 1995). We use statistics to make inferences about the true nature of the world, to answer research questions, and to test theories. Hence, the goals of the course are to make sure that you walk away understanding the **conceptual underpinnings** of each technique, the SPSS **procedures** necessary to conduct these analyses, and the skills to be able to critically **interpret** your own results and the claims of the research you encounter throughout your careers. Thus, **this not a course of memorization but <u>training in how to be an effective researcher</u>**.

Course Requirements.

Registered students are expected to **watch every lecture and attend every lab**. Recommended course textbooks are for your edification. I have given you many options, with most of them free. The more you avail yourself of any one of them, the better you will do in the course. I suggest you peruse them to see which you prefer. Then, when we are on a particular topic for that week, consult your text for their way of explaining and demonstrating the technique. If you have read and understood this, then please send the instructor an email with the subject line PSYC302 and the name of your favourite statistical test in the body of the email.

The other readings are very important resources and ones that I recommend to everyone doing psychology research. Abelson's perspective in Statistics as Principled Argument is brilliant and will be something to refer to even after the course is done. Pinker's expertise as a language researcher and writer has culminated in his excellent book about writing, The Sense of Style. If you read these two books, I can guarantee that your research acumen and therefore assignments will be better than they would have been otherwise.

Textbook. There is no required textbook for this course. However, the recorded lectures (see below) will take the place of a text resource. See also the recommended sources on page 1 in syllabus and in slides, some of which will be available on onQ as well.

Lectures. After week 1, we will be running lectures in a "flipped classroom" style. In-person lecture classes will be a review of the pre-recorded lecture videos distributed via onQ. You are required to watch all lectures as these will provide the background necessary to succeed in lab, with homeworks, and writing proposals. In person lectures times will be for questions, clarification, ungraded in-class exercises,

and going over any aspect of the pre-recorded lecture for that day. It will not be a repeat lecture.

A note on the flipped classroom approach. The data are pretty clear about 2 things: (1) that flipped classrooms result in better learning outcomes for students, and (2) students initially report not liking it as much as a traditional in-person lecture approach, but then end up liking it more. With topics like statistics and methods, a flipped classroom allows greater flexibility for students to slow down or repeat material when needed but also skim through what is already clear. It also allows for more time for questions and clarification during class time. It is ideal training for the kind of self-directed and independent work ethic that is how research is done. The kind of work you will be doing as a thesis student next year.

Homework (90 points total). There will be 3 homework assignments (worth 20, 30, and 40 points, respectively) for which you will have one week to complete. Questions will test knowledge of basic concepts, your ability to interpret statistical results, and the connection between research questions, study design, measures, and the appropriate statistical tests. Each homework will consist of 4-6 questions, with each question having multiple parts.

Lab Comprehension Assessments (40 points total). During lab meetings you will have a short assessment to assess your comprehension of **the SPSS procedures covered for <u>that day</u>**. These are meant for you to practice what was just covered in that lab, assess your understanding, and realize what you need to work on. Only the best 8 (5 points each) out of the 10 will be used to calculate your final grade.

Proposals (70 points total). You will be given two opportunities to practice proposal writing to prepare you for the final assignment, a 5-page proposal. We will have 3 lectures on how to write good proposals before each Proposal is due. The rubric for each is on onQ.

<u>Proposal 1 (10 points)</u> will be one single-spaced page using basic (PSYC202-level) statistics to test any psychology-related question containing:
    (1) a clearly stated aim or objective and/or research question
    (2) justification of a clearly stated hypothesis
    (3) appropriate design and measures and
    (4) appropriate statistics to test that hypothesis.
For Proposal 1 you MUST propose only a 2-variable study for which only a t-test OR correlation applies.
Points will be given for adhering to each of those 4 criteria (2.5 points each).

<u>Peer Feedback for Proposal 1</u>: Each student will then randomly be assigned one peer's proposal for review. Peers will provide feedback via track changes and comments in Word *within 1 week* on each of the four points above. You will not receive points for submitting the peer feedback BUT you will get a ZERO for your own proposal if you do not submit your review of a peer's proposal by the deadline.

   Proposal 2 (20 points) will be the same process as with Proposal 1 except that the statistics MUST only be **ONE** of the group comparison tests covered prior to reading week (ANCOVA or MANOVA), with a maximum limit of 2 DVs, 1 CV, and/or 1 grouping variable. You must choose a ***completely different research question from Proposal 1***. The same grading rubric will be applied, though with point values increased (5 points for each of 4 criteria).

   Peer Feedback for Proposal 2: Each student will then randomly be assigned one peer's proposal for review. Peers will provide feedback via track changes and comments in Word *within 1 week* on each of the four points above. You will not receive points for submitting the peer feedback BUT you will get a ZERO for your own proposal if you do not submit your review of a peer's proposal by the deadline.

   Final Proposal (40 points) will be a 5-page, double-spaced proposal on yet **another completely new topic (not same as Proposal 1 or 2)** using any of the multivariate statistics covered in PSYC302. The final proposal will be graded by same rubric but with more points per section (10 points for each of 4 criteria). No peer review.

Grading Points

Lab Assessments (best 8 out of 10) =	40	20%
Proposal 1 =	10*	5%
Proposal 2=	20*	10%
Final Proposal =	40	20%
Homework 1 =	20	10%
Homework 2 =	30	15%
Homework 3 =	40	20%
	Total = 200 points	100%

*Note: ZERO points if you do not submit peer feedback.
All due dates are 5pm Eastern Time Zone.

GRADING METHOD All components of this course will receive numerical points/percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to Queen's Official Grade Conversion Scale:

Grade	Numerical Course Average (Range)
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59
D	53-55
D-	50-52
F	49 and below

Electronic Considerations.
  All course materials will be distributed through onQ. Please log in before January 10 to make sure that you have no problems with access.
  We will be using SPSS for all analyses in this course. Currently, Queen's supports **version 29**. Downloading this version for yourself is required for the course and will be necessary for the first lab meeting.

EMAIL
  If your question is about course content, then please use the onQ forum so that other students can see the answers and join the discussion. If you have a question or problem that is specific to only you, please email your lab TA or lecture TA *first,* with "PSYC302" in the subject line. Your lab TA is the person who will know you the best.

<div align="center">

Turnitin

</div>

This course makes use of Turnitin, a third-party application that helps maintain standards of excellence in academic integrity. Normally, students will be required to submit their course assignments through onQ to Turnitin. In doing so, students' work will be included as source documents in the Turnitin reference database, where they will be used solely for the purpose of detecting plagiarized text in this course. Data from submissions is also collected and analyzed by Turnitin for detecting Artificial Intelligence (AI)-generated text. These results are not reported to your instructor at this time but could be in the future.

Turnitin is a suite of tools that provide instructors with information about the authenticity of submitted work and facilitates the process of grading. The similarity report generated after an assignment file is submitted produces a similarity score for each assignment. A similarity score is the percentage of writing that is similar to content found on the internet or the Turnitin extensive database of content. Turnitin does not determine if an instance of plagiarism has occurred. Instead, it gives instructors the information they need to determine the authenticity of work as a part of a larger process.

Please read Turnitin's Privacy Policy, Acceptable Use Policy and End-User License Agreement, which govern users' relationship with Turnitin. Also, please note that Turnitin uses cookies and other tracking technologies; however, in its service contract with Queen's Turnitin has agreed that neither Turnitin nor its third-party partners will use data collected through cookies or other tracking technologies for marketing or advertising purposes. For further information about how you can exercise control over cookies, see Turnitin's Privacy Policy.

Turnitin may provide other services that are not connected to the purpose for which Queen's University has engaged Turnitin. Your independent use of Turnitin's other services is subject solely to Turnitin's Terms of Service and Privacy Policy, and Queen's University has no liability for any independent interaction you choose to have with Turnitin.

Academic Integrity

Queen's students, faculty, administrators and staff all have responsibilities for upholding the fundamental values of academic integrity; honesty, trust, fairness, respect, responsibility and courage (see www.academicintegrity.org). These values 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 the Senate Report on Principles and Priorities http://www.queensu.ca/secretariat/policies/senate/report-principles-and-priorities).

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments and their behaviour conform to the principles of academic integrity. Information on academic integrity is available in the Arts and Science Calendar (see Academic Regulation 1 http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations/regulation-1), on the Arts and Science website (see https://www.queensu.ca/artsci/students-at-queens/academic-integrity), and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulation on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

Plagiarism: Because this course requires the submission of original writing assignments, each student is responsible to know and understand what plagiarism is and how to avoid it. Regardless of how and where you retrieve information (see paragraph on AI below), the principles of academic integrity apply. Please visit these helpful websites to help you make sure that you are able to write things in your own words:

- https://www.queensu.ca/academicintegrity/students/avoiding-plagiarismcheating
- https://integrity.mit.edu/handbook/academic-writing/avoiding-plagiarism-paraphrasing
- http://writing.wisc.edu/Handbook/QPA_paraphrase.html

Generative AI tools for writing: Although generative AI (e.g., ChatGPT) provide useful tools, **you cannot submit a proposal assignment for grading which has whole sentences copied from AI output**. That would be plagiarism (see previous paragraph). Writing is thinking – so if you did not write it, you did not think it. Building up YOUR critical thinking skills is the very point of this, or any, course. However, there is no reason to expect that some of you won't use AI tools on your way towards your own, self-written proposals. But I strongly recommend you do not use these tools instead of reading scientific papers – your goal is to mimic the form and style of these

and the only way to achieve that is to actually read. If you have read and understand this policy, email the instructor your favourite generative AI program name.

COPYRIGHT OF COURSE MATERIALS: Unless otherwise stated, the material on the course website is copyrighted and is for the sole use of students registered in PSYC302. The material on the website may be downloaded for a registered student's personal use but shall not be distributed or disseminated to anyone other than students registered in this course.

Course materials created by the course instructor, including all slides, presentations, handouts, tests, exams, and other similar course materials, are the intellectual property of the instructor. It is a departure from academic integrity to distribute, publicly post, sell or otherwise disseminate an instructor's course materials or to provide an instructor's course materials to anyone else for distribution, posting, sale or other means of dissemination, without the instructor's express consent. A student who engages in such conduct may be subject to penalty for a departure from academic integrity and may also face adverse legal consequences for infringement of intellectual property rights.

Web Browsers
onQ performs best when using the most recent version of the web browsers, Chrome or Firefox. Safari and Edge are strongly discouraged as these web browsers are known to cause issues with onQ.

Tech support
For technology support ranging from setting up your device, issues with onQ to installing software, contact ITS Support Centre https://www.queensu.ca/its/itsc

Accommodations for Disabilities
Queen's University is committed to achieving full accessibility for people with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. The Senate Policy for Accommodations for Students with Disabilities was approved at Senate in November 2016 (see https://www.queensu.ca/secretariat/policies/senate/academic-accommodations-students-disabilities-policy). If you are a student with a disability and think you may need academic accommodations, you are strongly encouraged to contact the Queen's Student Accessibility Services (QSAS) and register as early as possible. For more information, including important deadlines, please visit the QSAS website at: http://www.queensu.ca/studentwellness/accessibility-services/

Extenuating Circumstances
This course is structured using the principles of universal design in order to minimize any needs for specific accommodations. Nonetheless, there may be circumstances for

which a student requires accommodation. Please follow these Queen's and Faculty of Arts and Science guidelines:

Academic consideration is a process for the university community to provide a compassionate response to assist students experiencing unforeseen, short-term extenuating circumstances that may impact or impede a student's ability to complete their academics. This may include but is not limited to:
- Short-term physical or mental health issues (e.g., stomach flu, pneumonia, COVID diagnosis, vaccination, etc.)
- Responses to traumatic events (e.g., Death of a loved one, divorce, sexual assault, social injustice, etc.)
- Requirements by law or public health authorities (e.g., court date, isolation due to COVID exposure, etc.)

Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances. For more information, please see the [Senate Policy on Academic Consideration for Students in Extenuating Circumstances](#).

If you need accommodations/consideration, contact
psyc.accom@queensu.ca

Each Faculty has developed a protocol to provide a consistent and equitable approach in dealing with requests for academic consideration for students facing extenuating circumstances. Arts and Science undergraduate students can find the Faculty of Arts and Science protocol and [the portal where a request can be submitted](#). Students in other Faculties and Schools who are enrolled in this course should refer to the protocol for their home Faculty.

If you need to request academic consideration for this course, you will be required to provide the following name and email address to ensure it reaches our team accordingly:

      Instructor/Coordinator name: Tara Karasewich
      Instructor/Coordinator email address: psyc.accom@queensu.ca

Students are encouraged to submit requests as soon as the need becomes apparent and to contact their Professors/Course Coordinators as soon as possible once Consideration has been verified. Any delay in contact may limit the Consideration options available.

Please follow up by emailing the instructor within 2 days of receiving verification of your Consideration request.

For more information on the Academic Consideration process, what is and is not an extenuating circumstance, and to submit an Academic Consideration request, please see our [website](#).

Course Schedule

week	Date	Topic	Comments & Due Dates
1	T Jan. 7	Orientation	
	F Jan 10	***501 INFO SESSION***	
		No labs	
2	T Jan. 14	The Basics & Overview	
	F Jan. 17	Data Management	
		Lab 1: Orientation & Basics	
3	T Jan. 21	Data Reduction I	
	F Jan. 24	Data Reduction II	
		Lab 2: Messy Data	
4	T Jan 28	The Art of the Proposal I	
	F Jan 31	GLM intro	
		Lab 3: Data Reduction	
5	T Feb. 4	ANCOVA	Feb 4: Proposal 1
	F Feb. 7	MANOVA	
		Lab 4: PCA/Factoring	
6	T Feb. 11	MANOVA	Feb. 11 Peer Feedback
	F Feb. 14	**NO CLASS**	Feb 14: Homework 1
		Lab 5 ANCOVA & GLM	
7	Feb 17-21	**READING WEEK**	
8	T Feb 25	The Art of the Proposal II	
	F Feb 28	Repeated Measures	
		Lab 6: MANOVA	
9	T Mar. 4	RMs & Mixed Models	
	F Mar. 7	Multiple Regression	Mar. 7: Proposal 2
		Lab 7: Repeated-measures	
10	T Mar. 11	Multiple Regression	
	F Mar. 14	Multiple Regression	Mar. 14: Peer Feedback
		Lab 8: Multiple Regression	
11	T Mar.18	The Art of the Proposal III	
	F Mar. 21	PROCESS macro	Mar. 21: Homework 2
		Lab 9: Moderation	
12	T Mar. 25	Logistic Regression	
	F Mar. 28	SEM & Multilevel Modeling	
		Lab 10: Mediation	
13	T April 1	Grad School	
	F April 4	Wrap Up	April 4: Homework 3
		Lab 11: Wrap up & review	
	April 11		April 11: Final Proposal