

**PSYC 302: Advanced Research Methods**  
**Winter 2024**  
**SEE onQ FOR LOCATION AND CONTACT INFORMATION**

Required Software: SPSS 29 (free from Queen's ITS)

Recommended Texts:

Field, A., (2018). *Discovering Statistics Using IBM SPSS Statistics* (5<sup>th</sup> ed.). California: Sage Publications. YOU ALREADY HAVE THIS FOR PSYC301

Howitt, D., & Cramer, D., (2017). *Introduction to SPSS in Psychology* (7<sup>th</sup> 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 21<sup>st</sup> 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 with hypotheses with study design 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.

Learning Objectives

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 methods: 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 training in how to be an effective researcher.**

### ***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 report not liking it as much as a traditional in-person lecture approach. 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 Quizzes (40 points total).** During lab meetings you will have a short quiz to assess your comprehension of **the SPSS procedures covered for that day**. 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. Rubric for each is on onQ.

Proposal 1 (10 points) will be one single-spaced page using basic (PSYC202) statistics (e.g., t-test, correlation) 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.

Points will be given for adhering to each of those 4 criteria (2.5 points each).

Peer Feedback: 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 be multivariate (i.e., the stuff we cover in PSYC302). 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), and another peer review will be required within one week.

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 multivariate statistics (i.e., the stuff we have covered in PSYC302). The final proposal will be graded by same rubric but more points per section. No peer review.

### Grading Points

Lab Quizzes (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 =	<u>40</u>	<u>20%</u>
	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 12 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*. Your lab TA is the person who will know you the best.

### **Turnitin**

Queen's University has partnered with the third-party application Turnitin to help maintain our standards of excellence in academic integrity. Turnitin is a suite of tools that provide instructors with information about the authenticity of submitted work and facilitates the process of grading. Submitted files are compared against an extensive database of content, and Turnitin produces a similarity report and a similarity score for each assignment. A similarity score is the percentage of a document that is similar to content held within the database. 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. There is information on the course onQ site about Turnitin policies. See also privacy statement at:

[http://turnitin.com/en\\_us/about-us/privacy](http://turnitin.com/en_us/about-us/privacy)

### **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](http://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, 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](http://writing.wisc.edu/Handbook/QPA_paraphrase.html)

**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.

### **Internet Speed**

While wired internet connection is encouraged, we recognize that students may be relying on a wire-less connection. A minimum download speed of 10 Mbps and up to 20 Mbps for multimedia is recommended. To test your internet speed,

<https://www.speedtest.net/>

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**

© Tom Hollenstein 2024 Materials generated by instructor of this course may not be posted to commercial course material sites without permission. However, they may be used and adapted, with attribution, for noncommercial purposes.

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/sites/webpublish.queensu.ca.uslclwww/files/files/policies/senateandtrustees/ACADACCOMMPOLICY2016.pdf>). 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](mailto: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](mailto: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. 9	Orientation	
	F Jan 12	<b>*501 INFO SESSION*</b>	
		<i>No labs</i>	
2	T Jan. 16	The Basics & Overview	
	F Jan. 19	Data Management	
		<i>Lab 1: Orientation &amp; Basics</i>	
3	T Jan. 23	Data Reduction I	
	F Jan. 26	Data Reduction II	
		<i>Lab 2: Messy Data</i>	
4	T Jan 30	The Art of the Proposal I	
	F Feb 2	GLM intro	
		<i>Lab 3: Data Reduction</i>	
5	T Feb. 6	ANCOVA	Feb 5: Proposal 1
	F Feb. 9	MANOVA	
		<i>Lab 4: PCA/Factoring</i>	
6	T Feb. 13	MANOVA	Feb. 12 Peer Feedback
	F Feb. 16	<b>NO CLASS</b>	Feb 16: Homework 1
		<i>Lab 5 ANCOVA &amp; GLM</i>	
7	Feb 19-23	<b>READING WEEK</b>	
8	T Feb 27	The Art of the Proposal II	
	F Mar. 1	Repeated Measures <b>NO CLASS</b>	No lecture meeting, but watch lecture video
		<i>Lab 6: MANOVA</i>	
9	T Mar. 5	RMs & Mixed Models	
	F Mar. 8	Multiple Regression	Mar. 8: Proposal 2
		<i>Lab 7: Repeated-measures</i>	
10	T Mar. 12	Multiple Regression	
	F Mar. 15	Multiple Regression	Mar. 15: Peer Feedback
		<i>Lab 8: Multiple Regression</i>	
11	T Mar.19	The Art of the Proposal III	
	F Mar. 22	PROCESS macro	Mar. 22: Homework 2
		<i>Lab 9: Moderation</i>	
12	T Mar. 26	Logistic Regression	
	F Mar. 29	<b>NO CLASS</b>	GOOD FRIDAY NO CLASS
		<i>Lab 10: Mediation</i>	
13	T April 2	SEM & Multilevel Modeling	
	F April 5	Grad School	April 8: Homework 3
		<i>Lab 11: Wrap up &amp; review</i>	
	<b>April 15</b>		April 15: Final Proposal