PSYC 302: Advanced Research Methods Winter 2026
contact info on onQ

PSYC 302/3.0 is required for admission to PSYC 501/9.0.
Learning Hours: 120 (36 Lecture, 36 Lab, 12 Group Learning, 12 Online Activity, 24 Private Study)
Requirements: Prerequisite Registration in a PSYC Specialization, Major, or BIPS Specialization Plan, and a minimum grade of C in PSYC 301/3.0.

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

Recommended Texts:

Field, A., (2024). *Discovering Statistics Using IBM SPSS Statistics* (6th ed.). California: Sage Publications. YOU ALREADY HAVE THIS FOR PSYC301 (see discoveringstatistics.com Hell-p pages too)

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. (2021). *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**.

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 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 homework.

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 all 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.

Labs. Every week you must attend lab. Labs cover the process of using SPSS to run the analyses covered previously in lectures. Each lab will provide step-by-step instructions, several times, and then you will be able to demonstrate your mastery of what was just covered via a comprehension assessment (see below).

The labs are scheduled for 3 hours but do not usually take the full time. The remaining time at the end of each lab can be considered "office hours." Your lab TA is your primary contact and can help with any questions about labs, homework assignments, and proposals. If for some extreme reason you cannot make your lab section on a given week, email your lab TA and the head TA (Katie) immediately. In some circumstances for those with labs earlier in the week, it may be possible, though not guaranteed, for you to attend a lab section later in the week.

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. We would love it if the class average was 100% on these. Typically it is closer to 90%.

Proposals (70 points total). You will be given opportunities to practice proposal writing. First, critiquing a 1-page proposal, then writing your own 1-page proposal, and finally writing a 3-page proposal. We will have 3 lectures on how to write good proposals before each is due. The instructions, guidelines, and rubric for each is on onQ.

<u>Proposal Critique (10 points):</u> Following the instructions found on onQ, you will provide a critique of a 1-page proposal. You will identify 5 of the most major problems (2 points each), explaining why it is a problem and what can be done to improve it.

Proposal 1 (20 points). 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 can 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 (5 points each).

Peer Feedback for Proposal 1: 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 3-page, single-spaced proposal on **a completely new topic (not same as Proposal 1)** 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 Critique =	10*	5%
Proposal 1 =	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 your first lab (Jan. 6-8) 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.

Contact and email policy

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. All email contact must have "PSYC302" in the subject line . If you have a question or problem that is specific to only you, please email your lab TA *first*, with "PSYC302" in the subject line. Your lab TA is the person who will know you the best. If you are emailing about a potential future problem attending a lab, contact both your lab TA and the head TA in one email.

POLICIES

Turnitin

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 University is dedicated to creating a scholarly community free to explore a range of ideas, to build and advance knowledge and to share the ideas and knowledge that emerge from a range of intellectual pursuits. Each core value of academic integrity, as defined in the Senate Academic Integrity Policy, gives rise to and supports the next.

Honesty appears in presenting one's own academic work, whether in the context of an examination, written assignment, laboratory or seminar presentation. It is in researching one's own work for course assignments, acknowledging dependence on the ideas or words of another and in distinguishing one's own ideas and thoughts from other sources. It is also present in faithfully reporting laboratory results even when they do not conform to an original hypothesis. Further, honesty is present in truthfully communicating in written and/or oral exchanges with instructors, peers and other individuals (e.g. teaching assistants, proctors, university staff and/or university administrators).

Trust exists in an environment in which one's own ideas can be expressed without fear of ridicule or fear that someone else will take credit for them.

Fairness appears in the proper and full acknowledgement of the contributions of collaborators in group projects and in the full participation of partners in collaborative projects.

Respect, in a general sense, is part of an intellectual community that recognizes the participatory nature of the learning process and honours and respects a wide range of opinions and ideas. However, "respect" appears in a very particular sense when students attend class, pay attention, contribute to discussion and submit papers on time; instructors "show respect by taking students' ideas seriously, by recognizing them as individuals, helping them develop their ideas, providing full and honest feedback on their work, and valuing their perspectives and their goals" ("The Fundamental Values of Academic Integrity", 3rd Edition, p. 8).

Ultimately, responsibility is both personal and collective and engages students, administrators, faculty and staff in creating and maintaining a learning environment supported by and supporting academic integrity.

Courage differs from the preceding values by being more a quality or capacity of character – "the capacity to act in accordance with one's values despite fear" ("The Fundamental Values of Academic Integrity", 3rd edition, p. 10). Courage is displayed by students who make choices and integrous decisions that are followed by action, even in the face of peer pressure to cheat, copy another's material, provide their own work to others to facilitate cheating, or otherwise represent themselves dishonestly. Students also display courage by acknowledging prior wrongdoing and taking proactive measures to rectify any associated negative impact.

All of these values are not merely abstract but are expressed in and reinforced by the University's policies and practices.

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 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 assignments: Although generative AI (e.g., ChatGPT) provide useful tools, you cannot outsource your primary mechanisms for learning and improvement. Also, AI "hallucinates" quite often, especially when it comes to sources. A reference to a non-existent scientific paper will be considered a violation of academic integrity. Therefore, you **CANNOT**:

- **submit a proposal assignment (including critiques) 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.

- **submit a homework assignment for grading which has whole sentences copied from AI output**. Again, plagiarism. Also, the whole point of the homework is to give you guided practice as a research analyst. Cutting and pasting from AI will literally block you from understanding what you are doing.

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 working with students with disabilities to remove barriers to their academic goals. Queen's Student Accessibility Services (QSAS), students with disabilities, instructors, and faculty staff work together to provide and implement academic accommodations designed to allow students with disabilities equitable access to all course material (including in-class as well as exams). If you are a student currently experiencing barriers to your academics due to disability related reasons, and you would like to understand whether academic accommodations could support the removal of those barriers, please visit the QSAS website to learn more about academic accommodations or start the registration process with QSAS by clicking

Access Ventus button at **Ventus | Accessibility Services | Queen's (queensu.ca)**

VENTUS is an online portal that connects students, instructors, Queen's Student Accessibility Services, the Exam's Office and other support services in the process to request, assess, and implement academic accommodations.

To learn more go to: https://www.queensu.ca/ventus-support/students/visual-guide-ventus-students

Academic Consideration: For Students in 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.)

which is short-lived, begins within the term, and will not last longer than 12 weeks - see Academic Consideration webpage for details (https://www.queensu.ca/artsci/undergraduate/student-services/academic-consideration)

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. For more information, undergraduate students in the Faculty of Arts and Sciences should consult the Faculty's webpage on Academic Consideration in Extenuating Circumstances and submit a request via the Academic Consideration Request Portal. Students in other Faculties and Schools who are enrolled in this course should refer to the protocol for their home Faculty.

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

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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.

Land Acknowledgement
The territory that Queen's University occupies is included in the Dish with One Spoon Wampum Belt Covenant, an agreement between the Iroquois Confederacy and the Confederacy of the Ojibwe and Allied Nations to peaceably share and care for the resources around the Great Lakes. The Kingston Indigenous community continues to reflect the area's Anishinaabek and Haudenosaunee roots. There is also a significant Métis community as well as First Peoples from other Nations across Turtle Island present here today.

Equity, Diversity, and Inclusivity Statement
Queen's University recognizes that the values of equity and diversity are vital to and in harmony with its educational mission and standards of excellence. It acknowledges that direct, indirect, and systemic discrimination exists within our institutional structures, policies, and practices and in our community. These take many forms and work to differentially advantage and disadvantage persons across social identities such as race, ethnicity, disability, gender identity, sexual orientation, faith, and socioeconomic status, among other examples. In this class I will work to promote an anti-discriminatory, anti-racist and accountable environment where everyone feels welcome. Every member of this class is asked to show respect for every other member.

Room Accessibility
Mac-Corry B201 is wheelchair accessible, accessible for students and instructors, and has wide aisles, 3 wheelchair seats, 2 height adjustable tables, accessible areas, lever door handle, and automatic door operator.

Course Schedule

week	Date	Topic	Comments & Due Dates
1	M 1/5 W 1/7	Orientation	
		The Basics & Overview	
		Lab overview/SPSS rules	
2	M 1/12 W 1/14	***501 INFO SESSION***	
		Data Management	
		Lab 1: The Basics	
3	M 1/19 W 1/21	Data Reduction I	
		Data Reduction II	
		Lab 2: Messy Data	
4	M 1/26 W 1/28	The Art of the Proposal I	
		GLM intro	
		Lab 3: Data Reduction	Jan 30: Proposal Critique
5	M 2/2 W 2/4	ANCOVA	
		MANOVA	
		Lab 4: PCA/Factoring	
6	M 2/9 W 2/11	MANOVA	Feb 9: Homework 1
		The Art of the Proposal II	Read:Gabrielle et al. (2024)
		Lab 5 ANCOVA & GLM	
7	Feb 16-20	**READING WEEK**	
8	M 2/23 W 2/25	**NO CLASS**	
		Repeated Measures	
		Lab 6: MANOVA	
9	M 3/2 W 3/4	RMs & Mixed Models	
		Multiple Regression	
		Lab 7: Repeated-measures	Mar. 6: Proposal 1
10	M 3/9 W 3/11	Multiple Regression	
		Multiple Regression	
		Lab 8: Multiple Regression	Mar. 13: Peer Feedback
11	M 3/16 W 3/18	The Art of the Proposal III	
		PROCESS macro	
		Lab 9: Moderation	Mar. 20: Homework 2
12	M 3/23 W 3/25	Logistic Regression	
		SEM & Multilevel Modeling	
		Lab 10: Mediation	
13	M 3/30 W 4/1	Grad School	
		Wrap Up	
		Lab 11: Wrap up & review	April 3: Homework 3
	April 10		April 10: Final Proposal