PSYC 302: Advanced Research Methods
Queen's University - Winter 2021
Lectures: on video
Labs: Synchronized Zoom

Instructor: Dr. Tom Hollenstein (tom.hollenstein@queensu.ca)
Head TA: Tina Mihajlovic valentina.mihajlovic@queensu.ca
         Assistant TA: Chelsea Wood-Ross: Chelsea.wood-ross@queensu.ca

Lab Sections (Zoom info on onQ; all times Eastern Time Zone)
Tuesday 2:30-5:30pm Lab section 003: Tina Mihajlovic valentina.mihajlovic@queensu.ca
Thursday 8:30am-11:30am lab section 005: Megan Wylie: megan.wylie@queensu.ca
Thursday 11:30am-2:30pm lab section 004: Alison Crawford abc4@queensu.ca
Friday 2:30-5:30pm Lab section 002: Katherine Fretz 11kf23@queensu.ca

Required Software: SPSS 27

Recommended Texts:
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 project
in PSYC501. 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.

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, 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.

Lectures. Lectures will be recorded and each week's lectures will be distributed on Mondays. You are required to view all lectures as these will provide the background necessary to succeed in lab, with homeworks, and writing proposals. It will be extremely difficult for you to do well in this course without watching every lecture, making sure you understand the material for that lecture, and working with the material (slides and text) on your own.

Homework. There will be 3 homework assignments 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.

Lab Quizzes. During lab meetings you will have a short quiz to assess your comprehension of **the SPSS procedures covered for that day**. These will not be graded but are meant for you to practice, assess your understanding, and realize what you need to work on.

Proposals. You will be given two opportunities to practice proposal writing in order to prepare you for the final assignment, a 5-page proposal. We will have a whole lecture 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 (PSYC301) statistics (e.g., t-test, correlations) to test any question related to psychology 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.

You will get points for adhering to each of those 4 criteria. 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 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 except that the statistics must be multivariate (aka the stuff we cover in PSYC302). You must choose a completely different research question from Proposal 1. Same grading rubric will be applied as well as peer review required.

Final Proposal (30 points) will be a five page, double-spaced proposal, which will be graded by same rubric but more points per section. No peer review.

Grading

Proposal 1 =	10*	10%
Proposal 2 =	20*	20%
Final Proposal =	30	30%
Homework 1 =	10	10%
Homework 2 =	10	10%
Homework 3 =	20	20%
	Total = 100 points	100%

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

Electronic Considerations.

All course materials will be distributed through onQ. Please log in before January 13 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 27. Downloading the student 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*.

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

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, 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

COPYRIGHT OF COURSE MATERIALS: 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 con-duct 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
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.uslcwww/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:

Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances that are beyond their control and are interfering with their ability to complete academic requirements related to a course for a short period of time. The Senate Policy on Academic Consideration for Students in Extenuating Circumstances is available at:
http://www.queensu.ca/secretariat/sites/webpublish.queensu.ca.uslcwww/files/files/policies/senateandtrustees/Academic%20Considerations%20for%20Extenuating%20Circumstances%20Policy%20Final.pdf

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 under-graduate students can find the Faculty of Arts and Science protocol and the portal where a request can be submitted at: http://www.queensu.ca/artsci/accommodations . 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 name and email address of the instructor/coordinator. Please use the following:

      Instructor/Coordinator Name: Tom Hollenstein

      Instructor/Coordinator email address: Tom.Hollenstein@Queensu.ca

GRADING METHOD All components of this course will receive numerical 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

Course Schedule

week	Date	Topic	Due (always 5pm EST)
1	Jan. 11-15	Orientation	
		The Basics & Overview	
		Lab 1: Orientation	
2	Jan. 18-22	501 info session on Zoom	*11am EST Jan 18 (see onQ)*
		The Art of the Proposal I	
		Lab 2:SPSS & Basics	
3	Jan. 25-29	Data Management	
		Data Reduction I	
		Lab 3: SPSS & Basics	
4	Feb 1-5	Data Reduction II	Feb 1: Proposal 1
		GLM intro	
		Lab 4: Messy Data	
5	Feb. 8-12	ANCOVA	Feb 8: Peer feedback
		MANOVA	
		Lab 5: Data Reduction	
6	Feb. 15-19	**READING WEEK**	
7	Feb. 22-26		
		The Art of the Proposal II	
		Lab 6: PCA/Factor Analysis	
8	Mar 1-5	MANOVA	Mar. 1: Homework 1
		Repeated Measures	
		Lab 7: ANCOVA & GLM	
9	Mar. 8-12	Mixed Models	
		Multiple Regression	Mar. 12: Proposal 2
		Lab 8: MANOVA	
10	Mar.15-19	Multiple Regression	
		The Art of the Proposal III	Mar. 19: Peer Feedback
		Lab 9: Repeated-measures	
11	Mar.22-26	Multiple Regression	
		Lab 10: Multiple Regression	
12	Mar 29 – Apr 2	PROCESS macro	Mar. 29: Homework 2
		Logistic Regression	
		Lab 11:Moderated Regression	
13	April 5-9	Multilevel Modeling	
		Wrap up and review	April 9: Final Proposal
		Lab 12: Mediation	
	April 15		April 15: Homework 3