

PSY C08: Advanced Data Analysis in Psychology
Lectures: Asynchronous. Will be posted Wednesdays by 2:00pm.

"Statistics is the grammar of science." Karl Pearson (founder of modern mathematical statistics)

Instructor and Teaching Assistant Information

Professor:)

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Instructor Office hours:

By appointment. See course website
Online. Zoom link provided on course website

Teaching Assistants:

Teaching Assistant	Email Address
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Course Description and Objective

This course is a continuation of PSYB07H3. The primary focus of this course is on the understanding of Analysis-of-Variance, Regression, and their application to various research designs.

Learning Objectives:

1. *Knowledge:* By the end of this course, you should understanding the conceptual underpinnings of ANOVA and Regression analysis
2. *Application:* By the end of this course, you should understand when to use each type of analysis and how to run them in the program Jamovi
3. *Scientific Thinking:* By the end of this course, you should have a better understand of how the statistical tests we use relate to the research questions we are asking
4. *Communication:* By the end of this course, you should have improved your ability to communicate an analytic plan and statistical results
5. *Professional Development:* By the end of this course, you should have improved your time-management skills and ability to respond appropriately to constructive feedback.

Class Structure: Classes will consist of asynchronous lecture videos which will be posted every Wednesday by 2:00pm.

Asynchronous Lectures: Lectures will be pre-recorded and posted weekly by 2:00pm Wednesday starting May 11th. Please try to watch each lecture before the next lecture is posted so that you do not fall behind. I chose to make lectures asynchronous as I recognize that many students will struggle to attend a synchronous lecture due to various stressors including work, issues with internet connectivity, and being in a different time-zone. Moreover, issues with internet connectivity could disrupt the lectures and reduce clarity.

Tutorials: Tutorials will be held in person during the following days and times. Please attend the tutorial you registered for. During tutorials, the TAs will review course content and give you the opportunity to practice what you have been learning.

Day and Time	Location
Wednesdays 12:00pm-1:00pm	HL B106
Wednesdays 1:00pm-2:00pm	HL B110
Wednesdays 2:00pm-3:00pm	HL B110
Wednesdays 3:00pm-4:00pm	HL B110

Note about prerequisites: It is your responsibility to ensure that you have met *all* prerequisites listed in the Psychology section of the A&S Calendar for this course. If you lack any prerequisites you **WILL BE REMOVED**. No waivers will be granted.

Course Resources

Recommended Readings:

Gravetter, F. J., & Wallnau, L. B. (2017). *Statistics for the Behavioral Sciences* (10th Ed.). Boston, MA: Cengage Learning. ISBN: 978-1-337-36622-9

The textbook is highly recommended to aid with your learning for this course and contains multiple practice questions. Nonetheless, all required content will be covered during lectures.

Quercus: All course materials will be made available on the Quercus website, including lecture slides, lecture videos, announcements, and supplementary materials. You are advised to regularly check the announcements section of the Quercus website because you are solely responsible for staying on top of all course announcements made through Quercus. Lecture slides will be posted with the lecture videos every Wednesday.

A note on lecture slides and videos: During lectures we will regularly cover important material that extends beyond the lecture slides. You are responsible for this material with respect to testing. Instructional materials are for the purpose of learning in this course and must not be distributed or used for any other reason whatsoever. If the instructor has discovered that a student has put any of the course materials into the public domain, has sold the materials, or has given the materials to a person or company that is using them to earn money, the University will support the instructor in asserting and

pursuing their rights and copyrights in such matters. Likewise, lecture recordings are to be used exclusively by enrolled students for their personal learning only and are not to be shared.

Ongoing feedback: I've created a survey that students can fill out anonymously after each class to provide me with feedback on lectures. This gives you the opportunity to let me know if I am going through the material too quickly, if there is a particular concept you are really struggling with, if there is something that could be improved about the structure of each class, etc. The link to this survey is available on Quercus. I cannot promise that I will be able to touch on every concern expressed in the feedback surveys. I will be looking for common concerns being expressed by students.

How to get help with the course: The fastest way to get help with the course is to book a student hour with me. If you have a short question that can be answered via email, then please email myself or the TAs. Before emailing, however, please check the course syllabus as most of the important information about the course can be found there.

Course Evaluation

<i>Component</i>	<i>Date</i>	<i>Weight</i>
Midterm	TBD	32%
Data Analysis Project	August 8	25%
Quizzes	Throughout the term	8%
Final	During Final Exam Period	35%

Throughout the course there will be a combination of summative and formative forms of assessment. Summative forms of assessment are meant to test your knowledge of the content and see what you are learning in the course. These include tests and your final assignment. Formative assessments are meant to provide feedback to you so you may improve your work, and to provide feedback to me regarding how you are learning. These include quizzes which are relatively low stakes (e.g., each quiz is not worth much of your grade) but provide you with feedback on your understanding of the course material.

QUIZZES - 8% OF COURSE TOTAL: The nature of statistics is inherently cumulative – that is, theories, concepts and calculations learned at the beginning of the semester are utilized up to the end of this course. As a result, it is imperative that you watch the lectures regularly and ensure that you do not fall behind in your work. To help keep you on track and motivated to study throughout the semester, there will be short quizzes throughout the term (maximum 30 minutes per quiz) that will test your understanding of the material presented in lecture. The quizzes will be due one hour before the following week's lecture (i.e., 1 p.m. on Wednesdays). The quizzes will also be a good, low stakes opportunity to test your own understanding of the material and get feedback on your learning, which will help as you prepare for the Midterm and Final. There will be 8 quizzes total and your mark will comprise the highest 7 scores.

DATA ANALYSIS PROJECT – 25% OF COURSE TOTAL : With the goal of applying your new statistical skills and knowledge, you will be completing a data analysis project. For this project, you will have to analyze data that will be provided to you and formally report the results in APA style. You will also respond to a few reflection questions following completion of the project. More details of this assignment will be posted to the course website and discussed in class. For this project, you will use the statistical software Jamovi to analyze your data. This may be downloaded for free at the following link:

[jamovi - Stats. Open. Now.](#)

This program is great because it is free, really easy to learn how to use, and it works with another popular statistical program, R.

Policy on Lateness: The Covid 19 pandemic has impacted all of our lives in various ways, and I understand that some of you may be facing many additional stressors as a result of this. I understand this and I am happy to support you and work with you so that you can successfully complete this course and have a positive learning experience. For the data analysis assignment, you do not need to contact me so long as your assignment is submitted within 24 hours of the due date. Following this, a 2% late penalty may apply. If you are concerned about meeting a deadline or need assistance making a plan for getting work completed, please contact me as soon as you can so we can work this out together.

MIDTERM AND FINAL - 67% OF FINAL GRADE There will be two assessments over the course of the semester. At this time, these are both set-up to be online tests.

Midterm and final examinations will consist of two parts: a conceptual portion and a calculation portion. Additional information will be provided closer to the date of the exams. These will be held online and will be timed and open-book. As mentioned previously, the content of this course is inherently cumulative; therefore, the final exam is technically cumulative as well. The date of the final is not announced by the University until the middle of the term. You should not make travel plans until you learn the date of your final exams. If you miss the midterm or final exam, you will have to get in touch with the registrar's office: Students should refer these websites for information:

Final Exam Conflicts: <https://www.utoronto.ca/registrar/conflicts>

Missed Final Exams: <https://www.utoronto.ca/registrar/deferred-exams>

Academic Resources

Accessibility Needs: Students with diverse learning styles and needs are welcome in this course, and we will do everything in our power to ensure that all students have equal opportunities to succeed in the course. If you have a disability/health consideration that may require accommodations, please feel free to approach me and/or AccessAbility Services: Phone: (416) 287-7560 Email: ability.utoronto.ca

Academic Integrity and Plagiarism: Academic misconduct will be taken very seriously in this class. Cheating and plagiarism will not be tolerated and will be reported through the official university channels. Please refer to the University of Toronto's Code of Behaviour on Academic Matters for more information about what constitutes academic misconduct and how academic misconduct will be dealt with: <http://www.governingcouncil.utoronto.ca/Assets/Governing+Council+Digital+Assets/Policies/PDF/ppjun011995.pdf>

Potential offences include, but are not limited to:

- On tests and exams:
 - (a) Using or possessing unauthorized aids;
 - (b) Looking at someone else's answers during an exam or test;
 - (c) Misrepresenting your identity.

- In academic work:
 - (a) Falsifying institutional documents or grades;
 - (b) Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters

Resources for Distressed Students: As a student, you may experience challenges that can interfere with learning, such as strained relationships, increased anxiety, substance use, feeling down, difficulty concentrating and/or lack of motivation, financial concerns, family worries, and so forth. These factors may affect your academic performance and/or reduce your ability to participate fully in daily activities. All of us benefit from support and guidance during times of struggle; there is no shame in needing help or in asking for help. There are many helpful resources available through your college Registrar or through Student Life (studentlife.utoronto.ca and www.studentlife.utoronto.ca/feeling-distressed). An important part of the University experience is learning how and when to ask for help. Please take the time to inform yourself of available resources and do not hesitate to seek assistance from your Teaching Assistants or from me to help learn what supports are available.

Useful Links:

Statistical help and resources

Interactive Demonstrations: <http://statsapp-demos.uts.utoronto.ca/>

Facilitated Study Groups: <https://www.uts.utoronto.ca/ctl/twc/facilitated-study-groups-fsg>

Khan Academy: <https://www.khanacademy.org/math/statistics-probability>

APA Formatting: <https://owl.english.purdue.edu/owl/resource/560/01/> Skill building, future planning

Skill Building:

Academic Advising, Career Centre: <http://www.uts.utoronto.ca/aacc/>

Writing Services: <http://www.uts.utoronto.ca/twc/>

Presentation Skills: <http://www.uts.utoronto.ca/ctl/presentation-skills>

Co-op Program: <http://www.uts.utoronto.ca/askcoop/>

Your well-being :

Health and Wellness: <http://www.uts.utoronto.ca/hwc/>

Test anxiety: https://www.anxietybc.com/sites/default/files/Test_Anxiety_Booklet.pdf

Department of Psychology Missed Term Work Policy, SUMMER 2022

For missed term work (assignments and term tests) due to illness, emergency, or other mitigating circumstances, please follow the procedures outlined below.

Note:

- The following reasons are not considered sufficient for missed term work: travel for leisure, weddings, personal commitments, work commitments, human error.
- [Missed Final Exams](#) are handled by the Registrar's Office and should be declared on eService.
- Instructors cannot accept term work any later than five business days after the last day of class. Beyond this date, accommodations are only possible via the Registrar's Office [petition process](#).

The email address to submit missed term work accommodation requests in **PSYC08** is:

amanda.sharples@mail.utoronto.ca

ILLNESS OR EMERGENCY accommodations:

For missed work due to ILLNESS OR EMERGENCY, complete the following process:

1. Complete the [Request for Missed Term Work Accommodations Form](#).
2. Declare your absence on [ACORN](#) (Profile & Settings > Absence Declaration)
3. Email **both** of the following items to the course email **WITHIN 2 BUSINESS DAYS** of the missed work:
 - the [Request for Missed Term Work Accommodations Form](#)
 - *AND***
 - a screenshot of your Self-Declared Absence on ACORN

Note:

- *If you are unable to submit your request within 2 business days, you must still email your instructor within the 2 business day window to explain the nature of the delay. Exceptions to the 2 business day deadline will only be made under exceptional circumstances.*
- *If your absence is declared on ACORN, we do not require any additional supporting documentation (e.g. medical notes) to support your missed term work accommodation request.*

ACADEMIC CONFLICT accommodations:

For missed term work due to an ACADEMIC CONFLICT (e.g. two midterms at the same time):

1. Complete the [Request for Missed Term Work Accommodations Form](#).
2. Take screenshots of your course Quercus pages that demonstrate the conflict.
3. Email the form and screenshots to the course email **at least two weeks (10 business days) before the date of the activity**, or as soon as possible if it was not possible to identify the conflict earlier. Requests sent after the activity deadline may not be accommodated.

Note:

- *Multiple assignments due on the same day are not considered conflicts. Students are expected to manage their time effectively to meet assignment deadlines.*
- *Back-to-back tests/quizzes are not considered conflicts. Only overlapping activities are conflicts.*
- *Students are responsible for keeping their course timetables conflict-free. Students who register in two courses with overlapping lecture/tutorial/lab schedules will not be accommodated.*

RELIGIOUS CONFLICT accommodations:

For missed term work due to a RELIGIOUS CONFLICT:

1. Complete the [Request for Missed Term Work Accommodations Form](#).
2. Email the form to the course email **at least two weeks (10 business days) before the date of**

the activity, or as soon as possible if it was not possible to identify the conflict earlier. Requests sent after the activity deadline may not be accommodated.

ACCESSABILITY SERVICES accommodations:

For missed **TERM TESTS** due to ACCESSABILITY REASONS:

- **Contact your AccessAbility consultant** and have them email the course email detailing accommodations required.

For missed **ASSIGNMENTS** due to ACCESSABILITY REASONS:

- If your desired accommodation is **within the scope** of your Accommodation Letter (e.g. your letter includes “extensions of up to 7 days” and you need 3 days):
 1. Complete the [Request for Missed Term Work Accommodations Form](#).
 2. Email the form ***AND*** your **Accommodation Letter** to the course email specifying how many days extension you are requesting.
- If your desired accommodation is **outside the scope** of your Accommodation Letter (e.g. your letter includes “extensions of up to 7 days” but you need more time than that):
 1. **Contact your AccessAbility consultant** and have them email the course email detailing the accommodations required.

Accommodation Procedure:

After submitting your documentation, you will receive a response from your instructor or TA. This form does not guarantee that you will be accommodated. The course instructor reserves the right to decide what accommodations (if any) will be made. Failure to adhere to any aspect of this policy may result in a denial of your request. **You are responsible for checking your official U of T email and Quercus course announcements daily**, as accommodations may be time-critical.

For missed assignments, **do not wait for the instructor’s response to resume work on your assignment**. Extensions may be as short as one business day, depending on the nature of the illness/emergency. Complete your assignment as soon as you’re able, and email it to your instructor.

For an **anticipated absence** (e.g. a scheduled surgery or an illness with a prolonged recovery period), if you would like to request accommodations in advance, submit a [Verification of Illness Form](#) completed by your doctor AND the [Request for Missed Term Work Accommodations Form](#) to the course email. Absences can be declared up to 14 days into the future on ACORN.

Missed Accommodations

If an accommodation is granted but a continued illness/emergency prevents you from meeting its requirements, you must repeat the missed term work procedure to request additional accommodations.

Please make it clear in your subject line that you are requesting a second accommodation. E.g. If you are given an extension but are still sick and need more time, or if you miss a make-up term test, you must submit *another* [Request for Missed Term Work Accommodations Form](#) and declare your extended absence on ACORN. *Note: In the case of a missed make-up test, an opportunity to write a second make-up test may not necessarily be provided.

Lecture Schedule and Assigned Readings

I will try to stick to this outline, but changes may be made pending scheduling of the midterm. Changes will be announced on Quercus

Lecture	Date	Topics	Readings (Recommended)	Notes
L1	May 11	Course Introduction and review of B07	Syllabus and textbook Chapters 1-11 (not mandatory if you still have a good understanding of this material still).	
L2	May 18	Analysis of Variance: An Introduction	Chapter 12	
L3	May 25	ANCOVA	Chapter 12. Chapter 8 Pages 254-259	
L4	June 1	Repeated Measures ANOVA	Chapter 13	
L5	June 8	Non-parametric Tests	Chapters 17 & 18	
L6	June 15	Multiple Comparisons	Chapter 12 (pages 393-396)	
	June 22	<i>Reading Week</i>	<i>No Class</i>	
L7	June 29	Factorial ANOVA and Simple Effects Part 1	Chapter 14 (Pages 447-457)	
L8	July 6	Factorial ANOVA and Simple Effects Part 2	Chapter 14 (458-473)	
L8	July 13	Correlation and Intro to Regression	Chapter 15 & 16 (to page 543)	
L9	July 20	Multiple Regression	Chapter 16 (pages 544-553)	
L10	July 27	No Class - Work on Final Assignment		
	August 3	<i>Review (Synchronous session - zoom link will be provided)</i>	<i>Bring your questions!</i>	Final to be held during final exam period