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

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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 broken down into short (10-30 minute) videos. These will be posted weekly by 2:00pm Wednesday starting January 12th. 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: At this time, we are still determining the structure of tutorials. It is likely that you will have some tutorial sessions throughout the term, but the attendance will not be mandatory and when these do occur, they will be recorded and posted. Tutorials will not begin until at least the week of January 24th.

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

Required Readings:

Textbook:
Bors, D. (2018). Data analysis for the social sciences: Integrating theory and practice. London, UK: SAGE Publications Ltd.

Note: Hardcopies of the textbook can be acquired at the University Bookstore. Electronic copies can be acquired on Amazon Kindle and Google Play.

It is expected that students read the textbook to enhance their learning and understanding of the course content, as it delves into important theories, concepts and calculations in greater detailed than can be fit into lecture. Moreover, the textbook contains an abundance of practice questions, challenge questions, recommended readings, as well as complementary interactive demonstrations online that help illustrate various topics covered in this course.

Interactive Demos & Practice Questions: https://study.sagepub.com/bors

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: Lecture slides are not exhaustive and we will regularly cover important material that extends beyond them during lecture. 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		
Component	*Date*	*Weight*
Midterm	TBD	30%
Data Analysis Project	Apr 6	25%
Quizzes	Throughout the term	10%
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 - 10% 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 (and beyond!). 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 brief essay questions regarding 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 all course assignments, 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 - 65% OF FINAL GRADE There will be two assessments over the course of the semester. At this time, these are both set-up to be in-person tests. It is possible this will change depending on the pandemic and public health considerations.

Midterm and final examinations will consist of two parts: a theory portion and a calculation portion. Additional information will be provided closer to the date of the exams. If these remain in person, you will be allowed to use a 1 page, double-sided cheat sheet for calculations. If these move online, you will be allowed to access your note while completing the test. 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. You cannot take the final at a different date/time unless you have a verifiable medical/personal reason that is deemed acceptable by the department. See the section on "Missed Term Work Due to Medical Illness or Emergency" below for more information.

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@utsc.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.pd

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.utsc.utoronto.ca/
Facilitated Study Groups: https://www.utsc.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.utsc.utoronto.ca/aacc/
Writing Services: http://www.utsc.utoronto.ca/twc/
Presentation Skills: http://www.utsc.utoronto.ca/ctl/presentation-skills
Co-op Program: http://www.utsc.utoronto.ca/askcoop/

Your well-being :
Health and Wellness: http://www.utsc.utoronto.ca/hwc/
Test anxiety**:** https://www.anxietybc.com/sites/default/files/Test_Anxiety_Booklet.pdf PSYC08:

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	Notes
L1	Jan 12	Course Introduction and review of B07	Syllabus and textbook Chapters 1-6 (not mandatory if you still have a good understanding of this material still).	
L2	Jan 19	Analysis of Variance: An Introduction	Chapter 8	
L3	Jan 26	ANCOVA	Chapters 8 & 9	
L4	Feb 2	Repeated Measures ANOVA	Chapter 9	
L5	Feb 9	Non-parametric Tests	Chapters 6, 8, and 9	
L 6	Feb 16	Multiple Comparisons	Chapter 10	
	Feb 23	*Reading Week*	*No Class*	
L7	Mar 2	Factorial ANOVA and Simple Effects Part 1	Chapter 11	
L8	Mar 9	Factorial ANOVA and Simple Effects Part 2	Chapter 11	
L8	Mar 16	Correlation and Intro to Regression	Chapter 12	
L9	Mar 23	Multiple Regression	Chapter 12	
L10	Mar 30	No Class - Work on Final Assignment		
	Apr 6	*Review*	*Bring your questions!*	Final to be held during final exam period