

PSYC08: ADVANCED DATA ANALYSIS IN PSYCHOLOGY UNIVERSITY OF TORONTO SCARBOROUGH

WINTER 2023 SYLLABUS – IN-PERSON

Instructor: Olivia Podolak Lewandowska, PhD

Email: olivia.podolak@mail.utoronto.ca

Office Hours: Thursdays from 1 – 2 p.m. via Zoom.

Teaching Assistants	Email
Mostafa Miandari Hossein	mostafa.miandari@mail.utoronto.ca
Shaylyn Joseph	shaylyn.joseph@mail.utoronto.ca
Sadia Riaz	sadia.riaz@mail.utoronto.ca
Marco Sama	marco.sama@mail.utoronto.ca
Vignash Tharmaratnam	vignash.tharmaratnam@mail.utoronto.ca
Yitong Zhao	yit.zhao@mail.utoronto.ca

Please use your university email for all contact with the instructor and TAs.

Lecture: Wednesdays from 2:00 – 5:00 p.m. in SY-110. Recorded via Web-Option*.

Please note: These lecture recordings are considered to be **supplemental and are intended for students who are unable to attend class due to illness or emergency.*

Tutorials: Tuesdays all day. See schedule below (subject to change). **Not Recorded.**

Lectures and tutorials will begin 10 minutes after the hour. There are no tutorials the first week of class.

TUT0001 – 9:00 – 10:00 am in AC-332

TUT0002 – 9:00 – 10:00 am in HW-308

TUT0003 – 11:00 – 12:00 pm in AA-209

TUT0004 – 2:00 – 3:00 pm in HW-214

TUT0005 - 4:00 – 5:00 pm in HL-B110

TUT0006 – 4:00 – 5:00 pm in MW-264

TUT0007 – 5:00 – 6:00 pm in AC-332

TUT0010 – 12:00 – 1:00 pm in HW-402

ONLINE – 6:00 – 7:00 pm via Zoom

Course Description, Prerequisites & Objectives

From the UTSC Course Calendar: This course is a continuation of PSYB07H3. The primary focus of this course is on the understanding of Analysis-of-Variance and its application to various research designs. Examples will include *a priori* and *post hoc* tests. Finally, there will be an introduction to multiple regression, including discussions of design issues and interpretation problems.

Prerequisite: [PSYB07H3 or STAB23H3 or STAB22H3] and [(PSYB01H3) or (PSYB04H3) or PSYB70H3]

Exclusion: STAC52H3, PSY202H

Enrolment Limits: Restricted to students in the Specialist/Specialist Co-op and Major programs in Psychology, Mental Health Studies, Neuroscience and Paramedicine. Students in the Minor in Psychology will be admitted if space permits.

Breadth Requirements: Quantitative Reasoning

Note: It is the student's responsibility to check whether they have completed the prerequisites for this course. If you have an issue with your prerequisites or if you have any further questions, please contact the instructor and/or the Department of Psychology.

Course Objectives

Statistics are utilized in most (if not all) fields of research, and beyond. This widespread application of statistics makes it imperative for you to possess the knowledge to be successful in your professional career, and generally a good consumer of statistical information.

Learning Outcomes

Students will learn to:

1. Conduct various statistical analyses, both by hand and via statistical software.
2. Determine the most appropriate course of analysis within an experiment or study, depending on the research questions being posed, the hypotheses being posited, and/or the data being collected.
3. Effectively communicate the results of their statistical analyses, with regards to the guidelines set by the American Psychological Association.

Required Course 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 detail than can be covered in 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>

Course Webpage

Quercus will contain important course-related announcements, lecture slides (to be posted prior to each lecture), tutorial slides, WebOption videos, review questions, and course marks. **You must check Quercus regularly for course updates.**

Lectures

Lectures will take place on Wednesdays from 2 – 5 p.m. in SY-110, and recorded via WebOption. It is **strongly encouraged** that you attend the lecture in person because it will be more engaging and interactive than watching a

recorded lecture only. There is also a (albeit very small) chance that the recording might not work due to issues with technology. Most importantly, attending a regularly-scheduled lecture can provide structure to your studies and can help reduce procrastination, which can be catastrophic for a cumulative course like statistics.

Lecture slides: For your convenience, lecture slides will usually be posted by the evening before a lecture. They will be posted in PDF format in three versions only (1 slide, 3 slides and 4 slides per page). **Lecture slides are not a suitable replacement for attending lecture.** Lecture slides are not exhaustive and we will regularly cover important material that extends beyond the slides during lecture. You are responsible for this material with respect to testing. Instructional materials are only for the purpose of learning in this course and must not be sold, distributed or used for any other reason whatsoever.

Tutorials

While attending tutorials is not mandatory for this course (i.e., attendance is not taken nor are there any in-tutorial quizzes), it is **strongly encouraged** that students attend tutorials weekly in order to further their understanding of the material being taught in lecture. To help facilitate students' attendance, students do not need permission from TAs or the instructor to switch tutorials due to scheduling conflicts, or because they find that a particular TA's teaching style suits their learning better. In fact, students are encouraged to attend more than one tutorial for additional practice, since the TAs may differ slightly in the content they cover.

That being said, **tutorials are not substitutes for lecture.** There is simply not enough time to review all the concepts taught in lecture in less than an hour. Furthermore, there might be slight discrepancies between the material taught in lecture and in tutorial. Generally speaking, content presented in tutorial but not in lecture will not be tested; however, if you are unsure, please do not hesitate to contact the instructor for clarification.

Note: Tutorial admission is on a first-come, first-served basis. In the unlikely event that a tutorial has reached its room capacity, priority must be given to students who are officially enrolled in that tutorial.

Facilitated Study Groups

NOTE: The instructor does not control the scheduling of FSG sessions – all sessions are scheduled at the availability and discretion of the Centre for Teaching and Learning and its staff.

FSG sessions were developed by the Centre for Teaching and Learning as an important resource in helping students master the concepts in statistics, including those covered in PSYC08. However, FSG facilitators are **not** specifically hired by the Department of Psychology to help plan or support PSYC08 and are thus not accountable to instructor and/or TAs when creating FSG content. It is **solely your responsibility** (not the responsibility of the FSG facilitators) to know what content you are supposed to study for in this course. FSG facilitators should not be your primary point of contact if you have questions or concerns about PSYC08.

Course Assessments

1. Online Quizzes [10%]

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 attend the lectures and tutorials regularly to ensure that you do not fall behind in your work. To help keep you on track and motivated to study throughout the semester, and to give you practice (especially under the pressure of time), there will be short quizzes every lecture that will test your understanding of the material presented in lecture every week. The quizzes should take about 15-20 minutes to do, but you will be given an hour each to complete them. The quizzes will be due one hour before the following week's lecture (i.e., 1 p.m. on Wednesdays). **The top 7 out of 10 quizzes will be counted towards your final grade.**

Understandably, you may be worried that the quizzes will bring down your overall grade because you will not have an opportunity to study the content extensively before taking the quiz. To remedy this, the 10% weight of the quizzes will be added to your final exam (40% + 10% = 50%) if you score higher on your final exam than on the quizzes. **There are no make-ups for online quizzes, even with appropriate documentation. Quizzes are to be completed individually.**

2. Assignment [2 parts x 10% each = 20%]

The assignment will: (1) challenge your knowledge of the course content, (2) help refine your skills in scientific writing, specifically pertaining to the results of various statistical analyses, and (3) help you develop skills in the use of statistical software. Additional information regarding the assignment will be given closer to the due date.

Note: It is a student's responsibility to retain copies of their assignment submissions – including any hand-written work, if applicable – in case an assignment goes missing. Students who do not have a copy of an assignment to send upon the request of the instructor or a teaching assistant will be given a zero. Students will not be given additional time to re-do an assignment if they did not retain a copy of the original assignment, or if the copy is not accessible due to issues with technology (e.g., corrupt files). This is non-negotiable. It is strongly recommended that students retain back-ups of assignments on Dropbox, so that they may be easily accessed online.

3. Midterm Examination [30%]

Students will write a midterm examination as an interim assessment of their command of the course material. The midterm will be held outside of class, and will likely cover content from Weeks 1 to 7 (inclusive) and will likely be held in Week 9 after reading week. The exact content and timing will depend on when the midterm is scheduled by the department. The midterm will consist of short-answer theoretical questions and/or calculation questions. Additional information about the scheduling and content will be announced closer to the dates of the tests.

MAKE-UPS: Any student who misses the midterm will be permitted to take a make-up midterm that will be held approximately one week after the original midterm. The exact timing of the make-up midterm will be announced when it is scheduled by the department. **Students must submit a Missed Term Work form to the instructor to be eligible to write the make-up midterm. For details on how to submit this form, see below.**

4. Cumulative Final Examination [40%]

The final examination will consist of short-answer theoretical questions, short-answer calculation questions and long calculation questions. As mentioned previously, the content of this course is inherently cumulative; therefore, the final exam is 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. The date and time of the final exam will be arranged by the Registrar's Office, and **the exam must be written as scheduled**. In case of illness or extreme emergency at the time of the exam, you should petition for an exam deferral through eService: (<https://www.utoronto.ca/registrar/deferred-exams>).

All exams in this course will be closed-book. All necessary formula sheets and statistical tables will be provided to you. You will be required to have your student ID, a pencil/pen, eraser and calculator with you to write this test – these items will not be provided for you, and accommodations will not be made for students missing these items.

Grading Summary

1. ONLINE QUIZZES: 10%
2. ASSIGNMENTS: 20%
3. MIDTERM EXAMINATION: 30%
4. FINAL EXAMINATION: 40%

Course Topics Outline (Subject to Revision)

WEEK	TOPIC
1 – Jan 11	Syllabus & Review of Concepts from B07 (<i>Textbook Chapters: 1-6</i>)
2 – Jan 18	T-Tests vs. Analyses of Variance (ANOVA) (<i>Textbook Chapter: 8</i>)
3 – Jan 25	One-Way ANOVA (<i>Textbook Chapter: 8</i>)
4 – Feb 1	Randomized Block Design – Analysis of Covariance (ANCOVA) (<i>Textbook Chapters: 8 & 9</i>)
5 – Feb 8	Randomized Block Design – Repeated Measures ANOVA (<i>Textbook Chapter: 9</i>)
6 – Feb 15	Multiple Comparisons I – A Priori Tests (<i>Textbook Chapter: 10</i>) <i>Assignment Submission 1 Due on Feb 17 at 11:59 p.m.</i>
7 – Feb 22	READING WEEK – NO LECTURES OR TUTORIALS
8 – Mar 1	Multiple Comparisons II – Post Hoc Tests (<i>Textbook Chapter: 10</i>) <i>- Midterm Exam will likely take place in Week 8, but still TBA</i>
9 – Mar 8	Factorial ANOVA (<i>Textbook Chapter: 11</i>)
10 – Mar 15	Factorial ANOVA Simple Effects (<i>Textbook Chapter: 11</i>)
11 – Mar 22	Mixed-Design ANOVA (& Simple Effects) (<i>Textbook Chapter: 11</i>) <i>Assignment Submission 2 Due on Mar 24 at 11:59 p.m.</i>
12 – Mar 29	<i>Tentative:</i> Repeated-Measures ANOVA (& Simple Effects) (<i>Textbook Chapter: 11</i>)
13 – Apr 5	<i>Tentative:</i> Non-Parametric Tests – Kruskal-Wallis & Friedman’s Tests (<i>Textbook Chapters 6, 8 & 9</i>) <i>Assignment Submission 3 Due on Apr 10 at 11:59 p.m.</i>

Course Policies

Extensions and Late Penalties: Short extensions may be granted for good reasons, such as illness, conflict of due dates with assignments for other courses, or personal issues; however, extensions will be granted at the instructor's discretion and are **not guaranteed**. Extension requests must be made **before the due date**. If an extension has been granted before the assignment is due, there will be no penalty for lateness. If no extension has been granted, **a penalty of 10% per day will apply to late submissions:**

10% deduction: 5 minutes to 24 hours late
20% deduction: 24 hours & 5 minutes to 48 hours late
30% deduction: 48 hours & 5 minutes to 72 hours late
40% deduction: 72 hours & 5 minutes to 96 hours late
50% deduction: 96 hours & 5 minutes to 120 hours late

COURSE WORK WILL NOT BE ACCEPTED IF MORE THAN 5 CALENDAR DAYS HAVE PASSED.

Classroom Conduct and Participation: Our classroom is a place where you should always feel safe and respected. It is also a place that is conducive to learning and intellectual curiosity. Any behaviors compromising this environment will not be tolerated and the student(s) and/or individual(s) will be asked to leave. I work to create an interactive dynamic during my lectures that engages you to think and contribute. I challenge you to use this time to not only become familiar with the content we are discussing, but to also develop your critical thinking skills along with me. It is expected that you come to lecture and tutorial prepared with a pencil, eraser and calculator so that you are able to participate fully and actively. Accommodations will not be made for students who do not have these materials with them.

E-mail policy: In most cases, e-mails will be answered within 48 hours of receipt (not including weekends). The email subject should include our course name and nature of the inquiry. Emails that you send should contain no more than 1-3 questions and you should try to explain your current understanding of the concept in the email (which will be affirmed or corrected).

If you are not used to writing emails in an academic context, I encourage you to review this online resource so that you adopt proper email etiquette now and in the future:

<https://www.insidehighered.com/views/2015/04/16/advice-students-so-they-dont-sound-silly-emails-essay>

Syllabus changes: There may be minor changes made to the syllabus during the term. You will be notified of these changes immediately and no changes will be instituted that dramatically affect your ability to properly prepare for an assessment or examination (e.g., posting an assignment the week of the midterm).

Office Hours: Office hours are a valuable resource for you to learn more about the class and/or important things related to (but outside of) the class. You should consider visiting the instructor's office hours if you: (1) would like to discuss course content, (2) have an issue with course performance or progress, or (3) would like to discuss the field of psychology/neuroscience and how to get more involved. Private appointments may also be requested.

Tardiness: Punctuality to lectures, tutorials and exams is a sign of respect to your instructor, teaching assistants and fellow students. Tardy students should not ask the instructor or teaching assistants for what they missed from lecture because they can ask a fellow student. Furthermore, a student will not be granted additional time to complete term tests or exams if they are late.

Student Preparedness: It is expected that students come to class and tutorial prepared to actively work and participate. That is, students should have a pencil, eraser, calculator and all required formula sheets/tables at every lecture and tutorial.

AccessAbility – Our Commitment

It is the University of Toronto's goal to create a community that is inclusive of all persons and treats all members of the community in an equitable manner. In creating such a community, the University aims to foster a climate of understanding and mutual respect for the dignity and worth of all persons. In working toward this goal, the University will strive to provide support for, and facilitate the accommodation of individuals with disabilities so that all may share the same level of access to opportunities, participate in the full range of activities that the University offers, and achieve their full potential as members of the University community.

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability or health consideration that may require accommodations, please feel free to approach the instructor and/or the AccessAbility Services Office (<http://www.utsc.utoronto.ca/ability/>) as soon as possible. Your instructor will work with you and AccessAbility Services to ensure you can achieve your learning goals in this course. Enquiries are confidential. AccessAbility Services staff (located in AA142 – Arts and Administration Building) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. Please contact **416-287-7560** (tel/TTY) or email **ability.utsc@utoronto.ca** for more information. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

Equity, Diversity and Inclusion

The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. U of T does not condone discrimination or harassment against any persons or communities.

Academic Integrity

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. Behaviours that constitute academic dishonesty and the processes for addressing academic offences are outlined in The University of Toronto's Code of Behaviour on Academic Matters: <http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>

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:

<http://www.governingcouncil.utoronto.ca/Assets/Governing+Council+Digital+Assets/Policies/PDF/ppjun011995.pdf>

Useful Links & Information

Academic Resources at UTSC

Office of the Registrar	https://www.utsc.utoronto.ca/registrar/
AccessAbility	https://www.utsc.utoronto.ca/ability/welcome-accessability-services
Academic Integrity	https://www.utsc.utoronto.ca/vpdean/academic-integrity-matters
Academic Advising & Career Centre	http://www.utsc.utoronto.ca/aacc/
Writing Support	http://www.utsc.utoronto.ca/twc/
Arts & Sci Co-op Program	https://www.utsc.utoronto.ca/artscicoop/
Academic Learning Support	https://www.utsc.utoronto.ca/ctl/academic-learning-support
Scarborough Campus' Student Union	https://www.scsu.ca/
Resources for Learning Remotely	https://utoronto.sharepoint.com/sites/UTSC-RemoteAccess
IT Support – Student Helpdesk	Call (416) 287-4357

Statistical Help and Resources

Math and Stats Support at UTSC	https://www.utsc.utoronto.ca/ctl/math-and-stats-support
Textbook: Interactive Demonstrations	http://statsapp-demos.utsc.utoronto.ca/
Khan Academy	https://www.khanacademy.org/math/statistics-probability
APA Formatting	https://owl.english.purdue.edu/owl/resource/560/01/

Safety & Well-Being at UTSC

Navi: Mental Health Wayfinder	www.uoft.me/navi
Mental Health Resources	https://www.utsc.utoronto.ca/home/mental-health-resources
Health and Wellnes	http://www.utsc.utoronto.ca/hwc/
Sexual Violence Response	https://www.utsc.utoronto.ca/hwc/sexual-violence-response
Campus Safety	https://www.utsc.utoronto.ca/safety/
Campus Police	Call (416) 978-2222 or 911 in case of emergency

The Centre for Teaching and Learning (CTL) is available to support you in your writing, math and stats, and English language needs. It offers online and in-person tutoring and consultations, and has a variety of helpful resources. For more information, please visit CTL's Student Support Centre at AC313 or check out <https://uoft.me/AcademicLearningSupport>.

Department of Psychology - Missed Term Work Policy

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:

olivia.podolak@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.