PSYB07: DATA ANALYSIS IN PSYCHOLOGY
UNIVERSITY OF TORONTO SCARBOROUGH

FALL 2023 SYLLABUS – IN-PERSON

Instructor: Olivia Podolak Lewandowska, PhD
Email: olivia.podolak@mail.utoronto.ca
Office Hours: Thursdays 11:00 am – 12:00 pm or by appointment in HW-508 (subject to change)

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Please use your university email for all contact with the instructor and TAs. Please include the course code in your email subject.

L01 Lecture: Wednesdays from 2:00 – 5:00 p.m. in SY-110
L02 Lecture: Thursdays from 6:00 – 9:00 p.m. in SW-309

Tutorials: Tuesdays all day. See schedule below.

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 HLB110
TUT0002 – 10:00 – 11:00 am in HLB110
TUT0003 – 9:00 – 10:00 am in HLB106
TUT0004 – 10:00 – 11:00 am in HLB106
TUT0005 - 5:00 – 6:00 pm in AA207
TUT0006 – 5:00 – 6:00 pm in HLB106
TUT0007 – 6:00 – 7:00 pm in HLB110
TUT0008 – 7:00 – 8:00 pm in AC332

Course Description, Prerequisites & Objectives

From the UTSC Course Calendar: This course focuses on the fundamentals of the theory and the application of statistical procedures used in research in the field of psychology. Topics will range from descriptive statistics to simple tests of significance, such as chi-squared tests, t-tests, and one-way analyses of variance. A working knowledge of algebra is assumed. Students in the Specialist programs in Psychology, Psycholinguistics or Neuroscience will be given priority for this course.

Exclusion: ANTC35H3, MGEB11H3/(ECMB11H3), MGEB12H3/(ECMB12H3), PSY201H, (SOCB06H3), STAB22H3, STAB23H3, STAB52H3, STA220H, STA221H, STA250H, STA257H
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 detailed than can be covered in lecture. Moreover, the textbook contains an abundance of practice questions, challenge questions, recommended readings, and interactive demonstrations online that help illustrate various topics covered in this course. It is recommended that you purchase this textbook because it is also the textbook used for PSYC08 and PSYC09.

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

Recordings: Lectures will be recorded via WebOption but it is <u>strongly encouraged</u> that you attend the lecture in person because it will be more engaging 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 (1 slide, 3 slides and 4 slides per page). <u>Lecture slides are not a suitable replacement for attending lecture.</u> 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. <u>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.</u>

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 <u>strongly encouraged</u> 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 if they need 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, <u>tutorials are not substitutes for lecture.</u> 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.

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 posted every week that will test your understanding of the material presented in lecture. The quizzes should take about 20-30 minutes to do, but you will be given an hour each to complete them. You will have <u>one</u> attempt to complete quizzes, and they will be due on 1 p.m. on Thursdays (for both sections of B07) one week after lecture. <u>The top 7 out of 10 quizzes will be counted towards your final grade.</u>

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 (35% + 10% = 45%) if you score higher on your final exam than on the quizzes. <u>There are no make-ups for online quizzes, even with appropriate documentation. Quizzes are open book, but are to be completed individually.</u>

2. Assignment [20%]

This 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) ultimately prepare you for the final examination. 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(s) – including hand-written work – 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. <u>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. This is non-negotiable.</u> It is strongly recommended that students retain back-ups of assignments on Dropbox, so that they may be easily accessed online.

3. Midterm Examination [35%]

Students will write an in-person midterm examination as an interim assessment of their command of the course material. The midterm will be held outside of class (likely in Week 8 after reading week) and will likely cover content from Weeks 1 to 5 (inclusive). 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 later in the term.

MAKE-UPS: Any student who misses the midterm may 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 follow the procedures for Missed Term Work (detailed below) to be eligible to write a make-up examination, and even then, are not guaranteed.

4. Final Examination [35%]

The in-person 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. 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.

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 these exams – 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. **ASSIGNMENT:** 20%
3. **MIDTERM EXAMINATION:** 35%
4. **FINAL EXAMINATION:** 35%

Extensions & 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 applies 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 <u>CALENDAR</u> DAYS HAVE PASSED.

Course Topics Outline (Subject to Revision)

WEEK	TOPIC
1 – Sep 6 (L01) & 7 (L02)	Introductions, Syllabus & Descriptive Statistics *(Textbook Chapters 1 & 2)* *No tutorials during first week of class.*
2 – Sep 13 & 14	Descriptive Statistics & Graphing *(Chapter 2)*
3 – Sep 20 & 21	Probability *(Chapter 3)* *Quiz 1 (Week 2 content) Due on Sept 21 at 1:00 p.m.*
4 – Sep 27 & 28	Probability Distributions *(Chapters 3 & 4)* *Quiz 2 (Week 3 content) Due on Sept 28 at 1:00 p.m.*
5 – Oct 4 & 5	Hypothesis Testing: Z-Scores & Intro to T-Tests *(Chapter 5)* *Quiz 3 (Week 4 content) Due on Oct 5 at 1:00 p.m.*
6 – Oct 11 & 12	READING WEEK – NO LECTURES OR TUTORIALS
7 – Oct 18 & 19	Hypothesis Testing: T-Tests, Errors & Power *(Chapter 5)* *Quiz 4 (Week 5 content) Due on Oct 19 at 1:00 p.m.*
8 – Oct 25 & 26	Chi-Squared Tests *(Chapter 6)* *Assignment Partner Contracts Due on Oct 27 at 11:59 p.m.* *Note: No Quiz because Midterm Exam will likely take place in Week 8 (TBA)*
9 – Nov 1 & 2	*No Lecture - In-Class Assignment Work Period* *Quizzes 5 & 6 (Weeks 7 & 8 content) Due on Nov 2 at 1:00 p.m.*
10 – Nov 8 & 9	Correlation & Regression *(Chapter 7)* *Assignment Submission #1 Due on Nov 10 at 11:59 p.m.* *Note: No Quiz because there is no lecture in Week 9*
11 – Nov 15 & 16	Introduction to the Analysis of Variance (ANOVA; *Chapter 8*) *Quiz 7 (Week 10 content) Due on Nov 16 at 1:00 p.m.*
12 – Nov 22 & 23	ANOVA (Continued; *Chapter 8*) *Quiz 8 (Week 11 content) Due on Nov 21 at 1:00 p.m.*
13 – Nov 29 & 30	Non-Parametric Alternatives *(Chapter 5)* *Assignment Submission #2 Due on Nov 27 at 11:59 p.m.* *Quiz 9 (Week 12 content) Due on Nov 30 at 1:00 p.m.* *Quiz 10 (Week 13 content) Due on Dec 4 at 11:59 p.m.*

Course Policies

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. You 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.

Generative Artificial Intelligence (AI) Tools

Students may use Generative AI-based tools (e.g., ChatGPT) responsibly* as learning aids with due consideration for the quality of the reference, which may be inaccurate, incomplete, or otherwise problematic. Students should, however, consider how the use of these tools may stifle their own learning, given that writing, analytical, and critical thinking skills are core learning outcomes of this course.

*Responsible use of AI-based tools in completing coursework must be done in accordance with the following:

1. Students must clearly identify any use of AI-based tools in their work. Any work that utilizes AI-based tools must be clearly marked as such, including the specific tool(s) used. Students may not, under any circumstance, submit any writing (copied or paraphrased) generated by an AI-based tool as their own for the purpose of completing assignments in this course. If you include material generated by an AI-based tool, it must be cited like any other reference material (with due consideration for the quality of the reference, which may be poor), otherwise it will be treated as plagiarism.

2. Students must ensure that their use of AI-based tools does not violate any copyright or intellectual property laws.

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

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.

IMPORTANT NOTES TO READ BEFORE YOU SUBMIT:

- The following reasons are not considered sufficient for missed term work: social activities, recreational travel, technological issues, avoidance of assessments or deadlines, work commitments.

- Missed Final Exams are handled by the Registrar's Office and should be declared on eService.

- For ACORN absence declarations, the date you declare the absence is required to fall within the seven-day declaration period (i.e.) the absence cannot be submitted proactively or retroactively.

- 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.

- If you are unable to submit your request within the specified number of business days, you must still email your instructor within that window to explain the nature of the delay. Exceptions to the deadlines are made only under exceptional circumstances.

- Multiple assignments due on the same day are not considered academic conflicts. Students are expected to manage their time effectively to meet assignment deadlines.

- Back-to-back tests/quizzes are not considered academic 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.

Procedure:

1. Complete the Request for Missed Term Work Accommodations Form ("MTW Form").

2. Email BOTH your MTW Form and Supporting Documentation to olivia.podolak@mail.utoronto.ca according to the instructions specified in the "Supporting Documentation Requirements and Deadlines" table below.

3. After submitting your documentation, you will receive a response from your instructor. The course instructor reserves the right to decide what accommodations 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.

Supporting Documentation Requirements and Deadlines:

Reason for Missed Work	Documentation required for a *first absence* in the term	Documentation required for *subsequent absences* in the term	Deadline for submitting documentation
Illness or Injury	ACORN Absence Declaration	UofT Verification of Illness Form	WITHIN 2 BUSINESS DAYS of the missed work
Bereavement	ACORN Absence Declaration	A death certificate or funeral announcement	WITHIN 2 BUSINESS DAYS of the missed work
University-sponsored athletic/artistic obligation at the varsity, provincial or national level	ACORN Absence Declaration	A note from a university staff member (advisor, coach, residence staff, etc.) who can substantiate the obligation, sent directly to the course email.	10 BUSINESS DAYS IN ADVANCE of the missed deadline
Disability-related reasons for students registered with AccessAbility Services	**For missed Term Tests:** - Contact your AccessAbility consultant and have them write to the course email detailing the accommodations needed. **For missed Assignments:** - 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), send your **Accommodation Letter** to the course email and specify 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), **contact your AccessAbility consultant** and have them write to the course email detailing the accommodations needed.		PREFERABLY IN ADVANCE OF THE MISSED WORK, OR AS SOON AS POSSIBLE
Academic Conflict (e.g., two midterms at the same time)	Screenshot from Quercus demonstrating the conflict.		10 BUSINESS DAYS IN ADVANCE of the missed work
Religious Conflict	None required		

Additional Notes:

- 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 are able and email it to your instructor.

- If an accommodation is granted but a continued illness/emergency prevents you from meeting its requirements, you must <u>repeat</u> the missed term work procedure to request additional accommodations. Please make it clear in your subject line that you are requesting a second accommodation. Examples: If you were granted an extension for a paper but are still unable to meet the new deadline, or if you miss a <u>make-up</u> term test, you must submit *another* MTW form and supply documentation according to the "subsequent absences" column in the chart above.

- In the case of a missed make-up term test, an opportunity to write a second make-up term test is not guaranteed.

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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.