

PSYC08: ADVANCED DATA ANALYSIS IN PSYCHOLOGY UNIVERSITY OF TORONTO SCARBOROUGH

WINTER 2020 SYLLABUS – **REVISED**
All revisions are highlighted in red text.

Instructor: Olivia Podolak Lewandowska, PhD

Email: olivia.podolak@mail.utoronto.ca

Office Hours: **Tuesdays 3:00 – 4:00 pm** or by appointment in SW 515 (subject to change)

Virtual Office Hours: **Thursdays 7:00 – 8:00 pm** on Instagram (@[olivia.pod.lew](https://www.instagram.com/olivia.pod.lew)) (subject to change)

| Teaching Assistants | Email | Tutorial # |
|-----------------------------|---|------------------------------|
| Lawrence Guo | linn.guo@mail.utoronto.ca | TUT0002 & TUT0003 |
| Marco Sama | marco.sama@mail.utoronto.ca | TUT0007 & TUT0008 |
| Dilakshan Srikanthan | dilakshan.srikanthan@mail.utoronto.ca | TUT0001 |
| Vignash Tharmaratnam | vignash.tharmaratnam@mail.utoronto.ca | TUT0006 |
| Anna Vasilevskaya | hanna.vasileuskaya@mail.utoronto.ca | TUT0004 & TUT0005 |

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.

Tutorials: Tuesdays from 9:00 a.m. – 7:00 p.m. (see below for complete schedule)

FSG Study Groups: Scheduled at the discretion of the FSG facilitator and the MSLC.

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 AA 205

TUT0002 – 10:00 – 11:00 am in AA 205

TUT0003 – 11:00 – 12:00 pm in BV 355

TUT0007 – 1:00 – 2:00 pm in HW 308

TUT0006 – 2:00 – 3:00 pm in HW 214

TUT0008 – 2:00 – 3:00 pm in HW 308

TUT0004 – 5:00 – 6:00 pm in SW 128

TUT0005 – 6:00 – 7:00 pm in SW 128

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 [an additional 0.5 credit at the B-level in Psychology]

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 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. Additionally, in this class, you will learn how to conduct various statistical analyses, apply them to various research designs, and report them according 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 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>

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.**

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 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, 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.

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. Since summer enrolment is typically lower than the fall and winter semesters, it is possible that FSG sessions may not be offered for PSYC08 this term.

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. IN-LECTURE 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 lecture 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 every lecture (5-15 minutes in length; time of administration during lecture will change from week to week) that test your understanding of the material presented in lecture. Since these quizzes will be conducted in lecture, it is your responsibility to ensure that you can fully commit to coming to lecture every week. ~~The top 8 out of 11 quizzes will be counted towards your final grade.~~ 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 ahead of time. 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, but only if you have completed at least 8 out of the 11 in-lecture quizzes 7 out of the 10 in-lecture quizzes (except in extraordinary circumstances supported by appropriate documentation).

THERE ARE NO MAKE-UPS FOR IN-LECTURE QUIZZES (even with documentation).

THERE WILL BE NO ACCOMMODATIONS MADE FOR STUDENTS WITH COURSE/WORK CONFLICTS.

(This includes instances in which courses do not overlap, but require the student to travel to other campuses.)

THESE QUIZZES ARE TO BE COMPLETED INDIVIDUALLY (unless otherwise stated by the instructor).

Note: Given the large volume of students and quizzes being administered, it is a student's responsibility to inform the instructor of a missing quiz grade prior to when graded quizzes are returned to students. If a missing grade is reported after quizzes are returned to the class, the student may be given a zero on the quiz.

2. ASSIGNMENT ~~[20%]~~ [10%]

On March 18th, a guest lecturer from TD Bank's research group will be coming in to show the class a demonstration of how their team utilizes the analyses learned in PSYC08 to understand client satisfaction. You will then be required to submit a written report of the results of this guest lecture, which will be due on April 1 at 11:59 p.m. In addition to demonstrating the practical application of statistics in the workplace, this assignment will also: (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 assignments will be given closer to the due date.

*Note: It is a student's responsibility to retain copies of their assignments (including hand-written calculations or assignments) in case an assignment goes missing. Students who do not have a copy of their 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. **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. ONLINE QUIZZES [2 x 5% each = 10%]

By popular demand, there will be online quizzes posted to Quercus in preparation for the midterm and final examinations. The quizzes will consist of multiple choice and/or fill-in-the-blank questions. Additional information regarding the quizzes will be given closer to the due dates.

4. MIDTERM EXAM [30%] & FINAL EXAM [40%]

Midterm and final examinations will consist of short-answer theoretical questions, short-answer calculation questions and long calculation questions. All necessary formula sheets and statistical tables will be provided to you at both examinations.

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.

Grading Summary

1. IN-LECTURE QUIZZES: 10%

2. ASSIGNMENT: 10%

3. ONLINE QUIZZES: 10%

4. MIDTERM EXAMINATION: 30%

5. FINAL EXAMINATION: 40%

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 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.

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 (even for writing quizzes).

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 two versions only (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 them 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 distributed or used for any other reason whatsoever.

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>

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.

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).

Tardiness: Punctuality to lectures and assessments 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 lecture quizzes 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. Accommodations will not be made for students who do not have these materials with them (even for in-lecture quizzes). Cell phones are not permitted to be used as substitutes for calculators.

Useful Links

Statistical help and resources

| | |
|--------------------------------------|---|
| Textbook: Interactive Demonstrations | http://statsapp-demos.utoronto.ca/ |
| Facilitated Study Groups | https://www.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

| | |
|----------------------------------|---|
| Academic Advising, Career Centre | http://www.utoronto.ca/aacc/ |
| Writing Services | http://www.utoronto.ca/twc/ |
| Presentation Skills | http://www.utoronto.ca/ctl/presentation-skills |
| Co-op Program | http://www.utoronto.ca/askcoop/ |

Your well-being

| | |
|---------------------|---|
| Health and Wellness | http://www.utoronto.ca/hwc/ |
| Test anxiety | https://www.anxietybc.com/sites/default/files/Test_Anxiety_Booklet.pdf |

The Department of Psychology

| | |
|--|---|
| UTSC Experiential Learning | http://www.utoronto.ca/psych/experiential-learning |
| Psychology lab opportunities | http://tinyurl.com/jjq25t7 |
| The Psychology & Neuroscience Departmental Association | http://www.thepnda.org/ |

Course Topics Outline *** (Subject to Revision, depending on when the midterm is scheduled) ***

| WEEK | TOPIC |
|----------------|--|
| 1 – Jan 8* | Syllabus & Review of Concepts from B07 (<i>Textbook Chapters: 1-6</i>) |
| 2 – Jan 15 | T-Tests vs. Analyses of Variance (ANOVAs) (<i>Textbook Chapter: 8</i>) |
| 3 – Jan 22 | One-Way ANOVA (<i>Textbook Chapter: 8</i>) |
| 4 – Jan 29 | Randomized Block Design – ANCOVA (<i>Textbook Chapters: 8 & 9</i>) |
| 5 – Feb 5 | Randomized Block Design – Repeated Measures ANOVA (<i>Textbook Chapter: 9</i>) |
| 6 – Feb 12 | Non-Parametric Tests – Kruskal-Wallis Test & Friedman's Test (<i>Textbook Chapters 6, 8 & 9</i>) |
| 7 – Feb 19* | READING WEEK – NO LECTURES OR TUTORIALS |
| 8 – Feb 26 | Multiple Comparisons – A Priori & Post Hoc Tests (<i>Textbook Chapter: 10</i>) <i>Note: The review session for this lecture has been cancelled. It will be rescheduled outside of lecture time once we know when the midterm exam is occurring.</i> |
| 9 – March 4 | Factorial ANOVA (<i>Textbook Chapter: 11</i>) |
| 10 – March 11 | Factorial ANOVA Simple Effects (<i>Textbook Chapter: 11</i>) |
| 11 – March 18* | GUEST LECTURE: TD Bank Research Group & Statistical Reporting (in-lecture quiz cancelled) |
| 12 – March 25 | Mixed-Design ANOVA (& Simple Effects) (<i>Textbook Chapter: 11</i>) |
| 13 – April 1 | Repeated-Measures ANOVA (& Simple Effects) (<i>Textbook Chapter: 11</i>) |

* = weeks with no in-lecture quizzes

Missed Term Work Due to Medical Illness or Emergency

All students citing a documented reason for missed term work must submit their request for accommodations **within three (3) business days** of the deadline for the missed work.

Students must submit **both** of the following:

- (1) A completed **Request for Missed Term Work Accommodations form** (<http://uoft.me/PSY-MTW>), and
- (2) **Appropriate documentation** to verify your illness or emergency, as described below.

Appropriate documentation:

1. For missed **term tests** due to **illness**:

Submit the Request for Missed Term Work Accommodations form (<http://uoft.me/PSY-MTW>), along with an **original** copy of the official UTSC Verification of Illness Form (uoft.me/UTSC-Verification-Of-Illness-Form) or an **original** copy of the record of visitation to a hospital emergency room. Forms are to be completed in full, clearly indicating the start date, anticipated end date, and severity of illness. The physician's registration number and business stamp are required.

Note: If an end date of "ongoing" is specified, the medical note will be assumed to cover a period of two weeks. If no end date / an unknown end date is specified, the note will be assumed to cover a period of three business days (starting from the illness start date).

2. For missed **term tests** due to **AccessAbility reasons**:

Meet with your **AccessAbility consultant** and have them email Keely Hicks (keely.hicks@utoronto.ca) detailing the accommodations required.

3. For missed **assignments** due to **illness**:

Submit the Request for Missed Term Work Accommodations form (<http://uoft.me/PSY-MTW>), along with a **hardcopy** of the Self-Declaration of Student Illness Form (uoft.me/PSY-self-declare-form).

4. 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), submit the Request for Missed Term Work Accommodations form (<http://uoft.me/PSY-MTW>), and attach a copy of your letter. **Specify how many days extension you are requesting on the request form.**

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), you will need to meet with your **AccessAbility consultant** and have them email Keely Hicks (keely.hicks@utoronto.ca) detailing the accommodations required.

5. For missed term tests or assignments in **other circumstances**:

Submit the Request for Missed Term Work Accommodations form (<http://uoft.me/PSY-MTW>), along with:

- In the **case of a death of a family member or friend**, please provide a copy of a death certificate.
- For U of T varsity-level or professional **athletic commitments**, an email from your coach or varsity administrator should be sent directly to Keely Hicks (keely.hicks@utoronto.ca) **well in advance** of the missed work, detailing the dates and nature of the commitment.
- For **religious accommodations**, please email Keely Hicks (keely.hicks@utoronto.ca) **well in advance** of the missed work.
- For circumstances **outside of these guidelines**, please email Keely Hicks (keely.hicks@utoronto.ca) on the date of the test/assignment deadline to describe your circumstances and ask what documentation would be appropriate.

Documents covering the above situations are NOT acceptable: medical prescriptions, personal travel, weddings/personal/work commitments.

Procedure:

Submit your (1) request form and (2) medical/self-declaration/other documents in person **WITHIN 3 BUSINESS DAYS** of the missed term test or assignment.

Submit to: Keely Hicks, Room SW420B, Monday – Friday, 9 AM – 4 PM. (Slide forms under door if out of office).

After submitting your documentation, within approximately one to five business days, you will receive a response from your instructor detailing the accommodations to be made (if any).

You are responsible for checking your official U of T email and Quercus course announcements daily, as accommodations may be time-critical.

You should continue to work on your assignments to the best of your ability, as extension accommodations may be as short as one business day, depending on the nature of the illness/emergency.

If an accommodation has been granted but you are unable to meet the conditions of the accommodation (ex. you need a longer extension, or you missed a make-up test), you will need to repeat the missed term work procedure and submit additional forms to request further accommodation. **Note that in the case of a missed make-up test, an opportunity to write a second make-up test may not be provided.**

Completion of this form does NOT guarantee that accommodations will be made. 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 for accommodation.

Missed Accommodations:

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

(E.g.) If you miss a make-up midterm, you would need to submit another Request for Missed Term Work Accommodations form. If your original medical note / documentation included the date of the make-up midterm, then only the Request form is required. If the date of the make-up midterm fell outside of the dates indicated on your original medical note/other documentation, then a new medical note/other appropriate documentation must also be submitted.

Importance of Three Business Day Window:

If you are unable to submit your documents in-person within the three-business-day window, **you must email Keely Hicks** (keely.hicks@utoronto.ca) **within the three-business-day window** to explain when you will be able to bring your documents in person. Exceptions to the documentation deadline will only be made under **exceptional circumstances**. Attach scans of your documentation, and be prepared to bring your documents to Keely in-person as soon as you are well. Late documents may not be accepted.

Note: Assignments due at the end of term

Instructors cannot accept term work any later than five business days after the last day of class. Beyond this date, you would need to file a petition with the Registrar's Office (<https://www.utoronto.ca/registrar/term-work>).

Note: Final examinations

This policy applies only to missed assignments and term tests. Missed final exams are handled by the Registrar's Office (<http://www.utoronto.ca/registrar/missing-examination>).

AccessAbility Services

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 (in SW-302) 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. The UTSC AccessAbility Services staff members are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations.

AccessAbility Services contact information

Phone: (416) 287-7560 Email: ability@utoronto.ca

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.