

# PSYC09: APPLIED MULTIPLE REGRESSION IN PSYCHOLOGY UNIVERSITY OF TORONTO SCARBOROUGH

## FALL 2023 SYLLABUS – IN-PERSON

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**Instructor:** Olivia Podolak Lewandowska, PhD

**Email:** olivia.podolak@mail.utoronto.ca

**Office Hours:** Wednesdays from 12 p.m. – 1 p.m. in HW-508 (subject to change)

**Lectures:** Thursdays from 2 – 5 p.m. in SW-316.

**Teaching Assistant:** Moaz Shoura

**Email:** moaz.shoura@mail.utoronto.ca

**Office Hours:** By appointment only.

**Tutorials:** Mondays from 12 p.m. – 1 p.m. in SW-316.

*Note: Lectures and tutorials will begin 10 minutes after the hour and will not be recorded.*

**Please use your university email for all contact. Please include the course code in your email subject, as both PSYB07 and PSYC09 are being taught this semester.**

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## Course Description, Prerequisites & Objectives

**From the UTSC Course Calendar:** An introduction to multiple linear regression (MLR) and its applications in psychological research. The course covers the data analysis process from data collection to interpretation: how to deal with missing data, the testing of assumptions, addressing problem of multicollinearity, significance testing, and deciding on the most appropriate model. Several illustrative data sets will be explored in detail. The course contains a brief introduction to factor analysis. The goal is to provide the students with the skills and understanding to conduct and interpret data analysis in non-experimental areas of psychology.

**Prerequisite:** [\[PSYB07H3\]](#) or [\[STAB22H3\]](#) or [\[STAB23H3\]](#) and an additional 0.5 credit at the B-level in Psychology

**Exclusion:** [\[MGEC11H3\]](#)

**Breadth Requirements:** Quantitative Reasoning

**Note #1:** Restricted to students enrolled in the Specialist/Specialist Co-op and Major programs in Psychology, and Mental Health Studies, and the Specialist/Specialist Co-op in Neuroscience Cognitive stream. Students in the Minor program in Psychology will be admitted if space permits.

**Note #2:** 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 administrative staff within 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. PSYC09 in particular is designed to prepare students to better understand the use of MLR and its applications in psychological research. This class emphasizes both theoretical and practical skills necessary to interpret and conduct MLR using SPSS statistical software. This course will also

highlight how MLR connects to several other statistical techniques, and how these approaches are used in contemporary psychological research. Students will be asked to take a hands-on approach to data analysis, ranging from data preparation to model building and interpretation. Students will work with sample datasets using SPSS during lecture and tutorials, allowing them to practice the key skills and review the content required for course assignments and exams.

## Learning Outcomes

Students will learn how to:

1. Use SPSS statistical software to clean/prepare data, conduct tests of assumptions, run MLR analyses (or related tests), and interpret the output.
2. Determine the most appropriate course of analysis within an experiment or study, depending on the hypotheses being posed, and the data being collected.
3. Effectively communicate the results of their MLR analyses by tailoring them to the intended audience, using the guidelines set by the American Psychological Association (APA).

## Required Software

**For this class, you must obtain an SPSS license.**

SPSS is a software used for statistical analysis. All lectures and tutorial activities will be based on this specific program. Furthermore, all class assessments (including tests and the final project) must be completed using SPSS.

You may purchase an SPSS license at a discounted student rate (\$90 for the year) here:

<https://onesearch.library.utoronto.ca/ic/spss-students>

## Course Textbook

**Bors, D. (2018). *Data analysis for the social sciences: Integrating theory and practice*. 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, 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>

**Supplementary/Optional Textbook:** Allison, P. D. (1999). *Multiple Regression: A Primer*. Pine Forge Press.

## Lectures

Lectures will take place on Thursdays from 2 – 5 p.m. in SW-316 and will not be recorded. **Weekly attendance will be taken to monitor students' progress and involvement in the course.** Attending a regularly scheduled lecture provides structure to your studies and can help reduce procrastination, which can be catastrophic for a cumulative course like statistics.

## 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 to further their understanding of the

material being taught in lecture. 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.

## Course Webpage

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

## Course Assessments

### 1. Mini Assignments [10%]

There will be up to six mini assignments that will help you understand the content being taught each week or to help you practice analyzing data in SPSS. Assignments will be introduced in lecture and will be usually due 1-2 weeks later. The lowest assignment will be dropped and not counted towards your final grade.

**Note:** It is a student's responsibility to retain copies of their assignments (including hand-written work) 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 an opportunity to re-do or re-submit an assignment if their submission is illegible, or in a corrupt file.**

### 2. Term Tests [25% + 30% = 55%]

There will be two in-class term tests that are scheduled for October 19<sup>th</sup> 2023 and November 16<sup>th</sup> 2023. Both tests will include theoretical and practical/applied content, and will require students to generate and interpret SPSS outputs. Additional information will be provided closer to the date of the tests.

### 3. Consultancy Project [Multiple parts worth 35% in total]

In lieu of a final exam, students will form groups and will partner with an organization within Toronto or surrounding communities. Each organization affiliated with this project will provide students with data that require analysis in order to meet certain goals/objectives or to guide future work. Students will also be responsible for presenting their findings to their partnering organization in an accessible manner. The exact objectives of each project will vary from organization to organization; however, the general purpose of this final project will be to give students real, hands-on experience as statistical consultants.

The project will be divided into multiple steps to ensure that students stay on track with their progress and receive adequate feedback from the instructor and/or TA. Additional information will be provided once the details of each partnering organization's statistical needs are assessed and finalized.

## Course Topics Outline (Subject to Revision)

WEEK	TOPIC	DUE DATES
1 – Sep 7	Introductions & Review of Correlations and Simple Regression	-
2 – Sep 14	Introduction to Multiple Linear Regression (& SPSS)	-
3 – Sep 21	Assumptions I	-
4 – Sep 28	Assumptions II	Assignments 1 & 2 Due Sept 27
5 – Oct 5	Assumptions III	Assignment 3 Due Oct 4
6 – Oct 12	<b>READING WEEK – NO LECTURE/TUTORIAL</b>	Placement Survey Due Oct 13
7 – Oct 19	<b>TERM TEST 1</b>	Assignment 4 Due Oct 16 (Oct 20 without feedback before the test)
8 – Oct 26	Introduction to Logistic Regression	Project Contract Due Oct 27
9 – Nov 2	Mediation & Moderation	-
10 – Nov 9	<b>Time-Permitting: Factor Analysis</b> (Note: Would <u>not</u> be covered on Term Test 2)	Project Outline/Draft Due Nov 10 Assignment 5 Due Nov 8
11 – Nov 16	<b>TERM TEST 2</b>	Assignment 6 Due Nov 13 (Nov 17 without feedback before the test)
12 – Nov 23	Work Period for Activities Related to Final Project	-
13 – Nov 30	Work Period for Activities Related to Final Project	Final Project Due Dec 4

## 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 attend lectures and tutorials prepared to participate fully and actively.

**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). **Please note that learning the material from the lecture slides is not a suitable replacement for attending lecture.** The 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. 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 in any way.

**E-mail policy:** In most cases, e-mails will be answered within 48 hours of receipt (not including weekends). The email subject should include the 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:** The instructor reserves the right to make 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 a new assignment that will be due the week of a scheduled exam).

**Extensions Requests 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. **The policies dictated here do not apply to term tests.** 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

**Coursework will not be accepted if more than 5 calendar days (>120 hours) have passed.**

**Equity, Diversity & 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. Discrimination or harassment against any persons or communities, for any reason, will not be tolerated.

## 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.utscc@utoronto.ca](mailto:ability.utscc@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.

## 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.** This is particularly pertinent to the consultancy project, in which students are managing and analyzing data that belongs to an external organization.
  
3. Student must not use AI-based tools to complete term tests. **The use of any AI-based tools for the completion of, or to support the completion of term tests is strictly prohibited and will be considered an academic offense.**

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:

- 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](mailto:olivia.podolak@mail.utoronto.ca) according to the instructions specified below.

### Supporting Documentation Requirements and Deadlines:

Reason for Missed Work	Documentation required for a <i>first absence</i> in the term	Documentation required for <i>subsequent absences</i> in the term	Deadline for submitting documentation
Illness or Injury	<a href="#">ACORN</a> Absence Declaration	<a href="#">UofT Verification of Illness Form</a>	<b>WITHIN 2 BUSINESS DAYS</b> of the missed work
Bereavement	<a href="#">ACORN</a> Absence Declaration	A death certificate or funeral announcement	<b>WITHIN 2 BUSINESS DAYS</b> of the missed work

<p>University-sponsored athletic/artistic obligation at the varsity, provincial or national level</p>	<p><a href="#">ACORN</a> Absence Declaration</p>	<p>A note from a university staff member (advisor, coach, residence staff, etc.) who can substantiate the obligation, sent directly to the course email.</p>	<p><b><u>10 BUSINESS DAYS IN ADVANCE</u></b> of the missed deadline</p>
<p>Disability-related reasons for students registered with AccessAbility Services</p>	<p><b>For missed Term Tests:</b></p> <ul style="list-style-type: none"> <li>- Contact your AccessAbility consultant and have them write to the course email detailing the accommodations needed.</li> </ul> <p><b>For missed Assignments:</b></p> <ul style="list-style-type: none"> <li>- If your desired accommodation is <b>within the scope</b> of your Accommodation Letter (e.g. your letter includes "extensions of up to 7 days" and you need 3 days), send your <b>Accommodation Letter</b> to the course email and specify how many days extension you are requesting.</li> <li>- If your desired accommodation is <b>outside the scope</b> of your Accommodation Letter (e.g. your letter includes "extensions of up to 7 days" but you need more time than that), <b>contact your AccessAbility consultant</b> and have them write to the course email detailing the accommodations needed.</li> </ul>		<p><b><u>PREFERABLY IN ADVANCE OF THE MISSED WORK, OR AS SOON AS POSSIBLE</u></b></p>
<p>Academic Conflict (e.g., two midterms at the same time)</p>	<p>Screenshot from Quercus demonstrating the conflict.</p>		<p><b><u>10 BUSINESS DAYS IN ADVANCE</u></b> of the missed work</p>
<p>Religious Conflict</p>	<p>None required</p>		

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.

**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 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.** Examples: If you were granted an extension for a paper but are still unable to meet the new deadline, or if you miss a make-up 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.**

## Other Useful Links

### Academic Resources at UTSC

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

### Statistical Help and Resources

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

### Safety & Well-Being at UTSC

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