

# PSYC09: Applied Multiple Regression

University of Toronto Scarborough  
Summer Term, 2017

## **Instructor Information**

Dr. Andrew A. Cooper  
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Portable 103, Room 109

## **Course Information**

Lecture Time: M 9:10 -11:50  
Tutorial Time: M 1:10-1:50  
Course Location: SW316

**TA Information:** Olivia Podolak ([olivia.podolak@mail.utoronto.ca](mailto:olivia.podolak@mail.utoronto.ca))

*\*Office hour meetings with Dr. Cooper are made on a by-appointment basis.*

## **Course Description**

PSYC09 is designed to prepare students to better understand the use of multiple linear regression (MLR) in psychological research. This class emphasizes both theoretical and practical skills necessary to interpret and conduct MLR. 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 fundamentals of data preparation/cleaning, model building and interpretation. Classes take place in a computer lab, where students will be expected to work with sample datasets using SPSS during lecture and tutorial. Tutorial sections will allow students to practice key skills and review content in order to complete course assignments and prep for exams.

**Pre-Requisites & Requirements:** One of (PSYB07H3 / STAB22H3 / STAB23H3) + 0.5 credit in B-level psychology. See Psychology Department Website for further info about C09 & requirements.

**Required Text:** Allison, P.D. (1999). *Multiple Regression - A Primer*. Pine Forge: Thousand Oaks, CA. Additional optional readings and handouts will be posted on Blackboard.

**Required Program:** SPSS is a program for statistical analysis. Many class activities will be based on this specific program, and all class assignments must be completed using SPSS. SPSS will be available for you to use the course classroom and during tutorial, which should provide you sufficient time to complete assignments. However, SPSS is also widely available on computers around campus (see IITS for more info). You have the option to purchase SPSS at a discounted rate, but this is not required.

**Learning Outcomes:** By the end of this course, students should be able to

1. Describe the general principles of MLR as it is typically used in psychological research.
2. List the core assumptions underlying MLR & how they are evaluated using statistical software.
3. Discuss practical and theoretical challenges researchers may face when using MLR to answer specific research questions.
4. Demonstrate the ability to conduct a complete MLR analysis using SPSS, beginning with data preparation and culminating in model refinement and interpretation.

**Student Evaluation:** Your final grade will be based on (a) short assignments, (b) a mid-term exam, (c) a term project, and (d) a final exam, with two optional bonus assignments.

>>**Short Assignments (15%):** These are designed to allow students to practice and demonstrate skills relevant to conducting multiple regression analyses. Four short assignments will be assigned over the course of the semester. Students' grade for this section of the course will be based on the sum of their best three assignments. Assignments should not be construed as optional, as they relate to learning objectives and help prepare students for the term project and exams. Assignments must be submitted by 4:59pm on the assigned date; late assignments will not be accepted.

>>**Term Project (25%):** This project asks students to demonstrate the full range of knowledge and skills acquired across the semester. The final submitted project will incorporate SPSS outputs and written responses. Further detail will be provided later in the semester, in class and via Blackboard. Failure to complete this assignment will result in a maximum possible mark of 45 in the course; therefore, this assignment must be submitted in order to be eligible to pass the class.

>>**Midterm Exam (25%) and Final Exam (35%):** Exam content will reflect both theoretical and practical (applied) topics; format will be described later in the term. Students will be expected to generate and interpret SPSS outputs for these exams. The final exam will be cumulative but weighted more heavily towards the second half of the course. Exams will be administered per UTSC policies. See below for absences, accommodations, etc.

>>**Bonus Assignments:** Each optional bonus assignment will be worth up to 1.5% of your final grade. These are time-limited, with 1 due near the beginning of the semester, and another near the end.

### Grading Rubric

A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-
90%+	85-89	80-84	77-79	73-76	70-72	67-69	63-66	60-62	57-59	53-56	50-52

### General Class Policies

**Blackboard:** Blackboard will be used for all course materials, including handouts, assignments, grades, and relevant announcements (including last minute cancellations). Please check the website regularly to stay up to date. Lecture outlines will also be posted prior to each class. I recommend using these and adding own additional notes, as I will be pacing class on the assumption that students do so. Note that Blackboard may be unavailable for a short time early in the semester; plans to handle this outage will be addressed in class.

**Attendance:** Attending class is important to achieving a good outcome in this class, as content covered in class and in tutorials goes beyond the textbook. You are responsible for all information covered in class. If you miss a lecture or tutorial section, I encourage you to contact a classmate to find out what you missed. Some testable material will be presented only in class, and course notes are not a substitute for attendance. The practical skills that constitute a major focus of the course are also often much easier to grasp in a tutorial setting. If you are in class, please respect the experience of your classmates by not engaging in distracting behavior (e.g., Facebook, Reddit, chatting or texting).

**\*\*Instructional materials (e.g., slides, mock datasets, assignments, etc) are used only for the purposes of this course, and should not be distributed or used for any other purpose. Audio/video recording of class is not allowed without prior permission. \*\***

**Absences & Missed Work:** Due dates and method of submitting assignments will clearly be listed on all assignment materials and on Blackboard. There are no makeups for late or incomplete assignments, including the term paper. If you have a legitimate scheduling conflict (i.e., religious holiday) ahead of the midterm exam, you must contact Dr. Cooper at least two weeks prior to the confirmed scheduled date.

### **Psychology Missed Term Work due to Medical Illness or Emergency Policy:**

All students citing a documented reason for missed term work must bring their documentation to the Psychology Course Coordinator, Ainsley Lawson, **within three (3) business days** of the assignment due date.

**\*\* All requests must be accompanied by the [Request for Missed Term Work form](http://uoft.me/PSY-MTW) \*\***  
(<http://uoft.me/PSY-MTW>)

In the case of missed term work due to **illness**, only an **original copy** of the official [UTSC Verification of Illness Form](http://uoft.me/UTSC-Verification-Of-Illness-Form) will be accepted (<http://uoft.me/UTSC-Verification-Of-Illness-Form>). 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.

In the case of **medical emergency**, an original copy of the record of visitation to a hospital emergency room should be provided.

In the case of a **death of a family member**, a copy of a death certificate should be provided.

In the case of a **disability-related** concern, an email communication should be sent directly to the Course Coordinator ([psychology-undergraduate@utsc.utoronto.ca](mailto:psychology-undergraduate@utsc.utoronto.ca)) from your Disability Consultant at AccessAbility Services. The course instructor should also be copied.

For U of T **Varsity athletic commitments**, an email communication should be sent directly to the Course Coordinator ([psychology-undergraduate@utsc.utoronto.ca](mailto:psychology-undergraduate@utsc.utoronto.ca)) from a coach or varsity administrator should be submitted, **in advance** of the missed work.

Documents covering the following situations are **NOT acceptable**: medical prescriptions, anything related to personal travel, weddings/personal/work commitments.

Your [request form](#) and [medical](#)/other documents must be submitted in person **within 3 business days** of the missed test or assignment. Forms should be submitted to **SW427C between 9 AM - 4 PM**, Monday through Friday. You will receive an email response from the Course Instructor / Course Coordinator detailing the accommodations to be made (if any). You are responsible for checking your official U of T email daily, as accommodations may be time-critical. The Course Instructor reserves the right to decide what accommodations (if any) will be made for the missed work.

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

**Courtesy & Communications:** Please be respectful of your classmates and instructors at all times, and strive to make the classroom a comfortable place for everyone to learn. When time permits, there may be a few minutes to discuss straightforward issues with Dr. Cooper or Olivia after class or tutorial. However, for more complex or personal matters, please email to set up a meeting.

In most cases, emails will be answered within 48 hours (excluding weekends & holidays) unless you receive an automatic reply that suggests otherwise. Please keep your emails professional, concise, and clear: start with an informative title that includes the course name and some detail on your question (i.e., "C09 - question about stepwise regression"). A short email based around a single question, with some level of effort to explain your understanding or where you are stuck, will likely be most effective. If you are not familiar with writing academic emails, you may find this resource helpful: <https://goo.gl/ik1iw7>

**Grade Disputes:** Unless otherwise noted, you will have 5 business days from the posting of a grade to dispute or raise concerns about an assignment or test. Please wait at least 24 hours after grades are posted to email Dr. Cooper. Written requests for grade changes should include detailed information consisting of how you believe the grading was in error and any supporting information.

*\*\*If at any point you are experiencing difficulty in this course, please contact Dr. Cooper to discuss your concerns. The earlier you take this step, the better. \*\**

**AccessABILITY Services & Accommodations:** Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the AccessAbility Services as soon as possible.

AccessAbility Services staff (located in Rm SW302, Science Wing) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations [416-287-7560](tel:416-287-7560) or email [ability@utsc.utoronto.ca](mailto:ability@utsc.utoronto.ca). 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. The University of Toronto's Code of Behaviour on Academic Matters (<http://uoft.me/cbam>) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

In papers and assignments:

- Using someone else's ideas or words without appropriate acknowledgement;
- Submitting your own work in more than one course without the permission of the instructor;
- Making up sources or facts;
- Obtaining or providing unauthorized assistance on any assignment.

On tests and exams:

- Using or possessing unauthorized aids;

- Looking at someone else's answers during an exam or test;
- Misrepresenting your identity; and
- When you knew or ought to have known you were doing it.

In academic work:

- Falsifying institutional documents or grades;
- Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes; and
- When you knew or ought to have known you were doing so.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If students have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, they are expected to seek out additional information on academic integrity from their instructors or from other institutional resources.

**Note:** You may see advertisements for services offering grammar help, essay editing and proof-reading. Be very careful. If these services take a draft of your work and significantly change the content and/or language, you may be committing an academic offence (unauthorized assistance) under the *Code of Behaviour on Academic Matters*.

It is much better and safer to take your draft to the Writing Centre as early as you can. They will give you guidance you can trust. Students for whom English is not their first language should go to the English Language Development Centre.

If you decide to use these services in spite of this caution, you must keep a draft of your work and any notes you made before you got help and be prepared to give it to your instructor on request.

It is quite common for students to want to work and study together, perhaps especially so for stats classes. Please be mindful that the work you submit must be your own. It is not acceptable to have another student conduct work on your behalf, or to share your work or outputs from SPSS. Assignments must be submitted with indicators showing that you have completed the work independently. This class may be important to you, but not so important as to gamble with your academic career by cheating. If you find yourself wondering if something constitutes academic misconduct, I encourage you to investigate the subject more thoroughly before acting – not knowing that something is considered academic misconduct does not protect you from trouble! Knowing is half the battle! Consider visiting <http://uoft.me/academicdishonesty>

**Syllabus Changes:** There may be minor changes to the course syllabus based on pacing and needs of the class, or other unexpected occurrences. These will not impair your ability to succeed in the class, and you will be notified ASAP of any updates of this kind.

## Tentative Outline & Timetable

<b>Date</b>	<b>Lecture Content</b>	<b>Readings (Optional in Parentheses)</b>	<b>Tutorial #</b>	<b>Assignments Due This Week</b>
May 1	Overview, Goals & Key Concept Review	Chapter 1	<b>NONE</b>	
May 8	Intro to MLR & Data Preparation	Chapter 1 (Chapter 4)	1	Bonus 1
May 15	Running & Interpreting a Simple MLR	Chapter 2 (Chapter 5)	2	Assignment 1
May 22	<b>NO CLASS OR TUTORIAL -- MAY 24 HOLIDAY</b>			
May 29	Common Problems & Conceptual Issues for MLR	Chapter 3	3	
June 5	Assumptions I & Intro to Term Project	Chapter 6	4	Assignment 2
June 12	Assumptions II & Midterm Prep	Chapter 6	5	
June 19	<b>[Tentative] In-Class Midterm</b>		<b>NONE</b>	
June 26	Assumptions III & Reality Check	Chapter 7	6	Assignment 3*
July 3	<b>NO CLASS OR TUTORIAL -- CANADA DAY HOLIDAY</b>			
July 10	Mediation, Moderation, and Non-Linear Elements	Chapter 8 (Blackboard)	7	
July 17	<b>[Tentative] Class used to work on term project</b>		8	Assignment 4
July 24	Related Techniques and Concepts	Chapter 9	9	Term Project
July 31	MLR In Contemporary Research & Exam Prep	(Blackboard)	10	Bonus 2
TBD	<b>Final Exam - date announced on Blackboard</b>			