

PSY201H5F – Research Design and Analysis I

Wednesday 11:00am – 1:00pm

Online Synchronous

Thursday 12:00pm – 1:00pm

Online Synchronous

Course Delivery

ONLINE VIA Zoom: Please see the Quercus website for the course to find out how to attend the Zoom lectures which will be offered on the days and times specified above. We will try to make these lectures as interactive as possible. For instance, you can ask questions during a lecture using the chat function. A TA will be monitoring the chat line (which is private) and convey the questions to the lecturer, who will attempt to answer them.

- **Learn Anywhere Guide for Students**
<https://library.utm.utoronto.ca/students/quercus/learn-anywhere>
- **University of Toronto tech requirements for online learning**

Contact Information

Prof. Bruce Schneider
bruce.schneider@utoronto.ca

Office hours: Virtual via Zoom
(Be sure to register for a UTM Zoom account at <https://utoronto.zoom.us>)
Office hours and contact information will be announced on Quercus

Teaching Assistants:
Taylor Irvine
Raheleh Saryazdi
Tiana Simovic
Zenhua Xu
Office hours: Virtual via zoom
Office hours and contact information will be announced on Quercus

Tutorial Leaders:
Mahmoud Bitar
m.bitar@mail.utoronto.ca
Melanie Munroe
melanie.munroe@mail.utoronto.ca
Office hours: Virtual via zoom
Office hours and contact information will be announced on Quercus

Course Description

The topics in research design, probability theory, and descriptive and inferential statistics that we will cover in this course are those that you will find necessary in order to handle the material in more advanced psychology courses. As such, we will illustrate these statistical concepts with examples that you might encounter in those courses.

Learning Outcomes

By the end of this course, students should be able to;

- Acquire a working knowledge of probability
- Analyze and interpret data using quantitative techniques
- Use hypothesis-drive methods of scientific inquiry to answer psychological questions
- Collect, analyze, and interpret data collected using basic experimental designs
- Acquire an understanding of the assumptions underlying statistical analyses

Reading Material

Schneider, *Mastering the Black Box of Statistics and Research Design*. (2019). Wolfram ebooks, Wolfram Media, Inc. ISBN: 9781579550325.

This is an electronic book. For instructions on how to download the book, consult the course webpage. The book and the homework modules run on the Wolfram Player platform. This platform is free. For instructions on how to download this platform, and the book, see the course website.

Course Evaluation

The final grade will be the sum of the grades in two quizzes (20 points each), 8 computer module assignments (26 points total), and a final exam (32 points). To receive full credit for a computer module assignment, you must successfully complete it before the due date. There are no exceptions to this rule. The two quizzes and final will be online only exams. You will have to take both quizzes on the day and hour specified on the syllabus. The date and time for the final will be determined later in the semester. However, you will be able to practice taking a quiz or a final exam at any time during the semester. The practice quizzes and practice final will have formats identical to that used in the for actual quizzes and final. When you take a practice quiz, a record of every step you have taken in answering a question will be recorded and be available to you on your computer. You should feel free to discuss your performance on these practice quizzes with the tutors and TAs in the course during office hours. You will not receive a grade or any credit for them. Problem solutions, quiz preparation, and selected topics will be discussed during tutorial sessions. **The quizzes will be given from 11-1 on the dates specified on the outline below.**

PsychED Participation for Course Credit (accessible via: <https://app.utm.utoronto.ca/experiments-signup>). The PsychED website is for PSY201 students to receive course credit for completion of faculty's research experiments. Participation in 3 hours of experiments or completion of 3 substitute assignments is worth a total of 2% of the PSY201 final grade. Each hour-long experiment would be worth 0.67% and a 30-minute experiment would be worth 0.33% of your final grade. Some experiments may be longer than an hour (e.g. 1.5, 2 or 3 hours). The maximum number of credit a student may earn is 2%. There is no monetary payment for participation. Students wishing **NOT** to participate in PsychED experiments can complete up to three (3) substitute assignments for credit.

Students should check early and often to make sure they can sign up for 3 hours by December 31, 2020.

Course Webpage

The website associated with this course is accessible via <http://q.utoronto.ca>

Note: You don't need to create a new login for Canvas; it already knows who you are. You just need your UTORid and password. This is the same login that gets you onto the wireless network with your laptop, and the same one that you use to check your email. If you're confused about your UTORid or don't remember your password, go to:

<https://www.utorid.utoronto.ca/>

In order to access course material, monitor course information, and view your grades you must log into Canvas. If you have any general questions regarding Canvas, please visit the following help site:

<https://q.utoronto.ca/courses/46670/pages/student-quercus-guide>

IMPORTANT COURSE POLICIES ****PLEASE READ****

Office Hours and Email Communication

Please note that there are sixteen virtual office hours per week in this course. We welcome students during these hours to discuss any issue related to experimental design and statistics. The instructor will not answer email questions at any time. The tutors will respond to emails (psy201utm@gmail.com) only during their office hours and only if there is no one that they are currently engaged with on zoom.

Missed Test Special Consideration Request Process

Students who miss a test due to circumstances beyond their control (e.g. illness or an accident) can request that the Department grant them special consideration. Students must present their case to the Department (NOT the Instructor) by submitting a request via the online Special Consideration Request form at: <https://utmapp.utm.utoronto.ca/SpecialRequest>.

Important note: Once the test/exam is available online and you're unable to write or have an approved request to miss, **DO NOT** at any point attempt to access the test/exam. If at any time you access the test/exam, you will **NOT** be able to submit a special consideration and/or your request will be refused.

If your request is approved by the department, the weight of the missed test will be redistributed to any remaining tests and to the final exam.

Extension of Time Special Consideration Request Process

Students who seek to be granted more time to complete their term work beyond the due date without penalty, owing to circumstances beyond their control (e.g., illness, or an accident), must do so by submitting a request **directly to the Instructor** for the period up to and including the last day of the term. The decision as to whether or not to apply a penalty for the specified period rests with the Instructor.

Students who seek to be granted more time to complete term work beyond the last day of the term must submit their request directly to the Department. This request covers the period following the last day of classes and ends the last day of the exam period. This is done by submitting a request via the online Special Consideration Request form at <https://utmapp.utm.utoronto.ca/SpecialRequest>. You are advised to seek advising by the departmental Undergraduate Counsellor prior to the deadline.

Supporting Documentation

The University is temporarily suspending the need for a doctor's note or medical certificate for any absence from academic participation. However, you are required to use the Absence Declaration tool on ACORN found in the Profile and Settings menu to formally declare an absence from academic participation. The tool is to be used if you require consideration for missed academic work based on the procedures specific to our campus/department.

Missed Final Exam or Extension of Time beyond exam period

Missed final exams or for extensions of time beyond the examination period you must submit a petition through the Office of the Registrar. <http://www.utm.utoronto.ca/registrar/current-students/petitions> and follow their procedures.

Penalties for Lateness

A penalty of 10% per calendar day (i.e., including week-ends and holidays, during which students are not able to submit term work) up to and including the last day of classes, will be applied by the Instructor. After the last day of classes, the penalty of 10% per calendar day will be applied by the Undergraduate Counsellor on behalf of the Department. No penalty will be assigned if request for special consideration, described above, was successful.

Academic Guidelines

It is your responsibility to ensure that you have met all prerequisites listed in the UTM Calendar for this course. If you lack any prerequisites you **WILL BE REMOVED** from the course up until the last day to add a course. Further information about academic regulations, course withdrawal dates and credits can be found in the University of Toronto Mississauga Calendar at: <http://www.erin.utoronto.ca/regcal/>.

You are encouraged to read this material. If you run into trouble and need advice about studying, preparing for exams, note taking or time management, free workshops and advice are available from the Robert Gillespie Academic Skills Centre at 905-828-5406.

AccessAbility Services

The University provides academic accommodations for students with disabilities in accordance with the terms of the Ontario Human Rights Code. This occurs through a collaborative process that acknowledges a collective obligation to develop an accessible learning environment that both meets the needs of students and preserves the essential academic requirements of the University's courses and programs. Students requiring academic accommodations for learning, physical, sensory, or mental health disabilities or medical conditions should contact the AccessAbility Office (2037B Davis Building), 905-828-3847. <http://www.utm.utoronto.ca/accessability/>

Privacy and Copyright Disclaimer

Notice of video recording and sharing (Download and re-use prohibited)

This course, including your participation, will be recorded on video and will be available to students in the course for viewing remotely and after each session. Course videos and materials belong to your instructor, the University, and/or other sources depending on the specific facts of each situation, and are protected by copyright. Do not download, copy, or share any course or student materials or videos without the explicit permission of the instructor. For questions about recording and use of videos in which you appear please contact your instructor.

Lectures and course materials prepared by the instructor are considered by the University to be an instructor's intellectual property covered by the Copyright Act, RSC 1985, c C-42. Course materials such as PowerPoint slides and lecture recordings are made available to you for your own study purposes. These materials cannot be shared outside of the class or "published" in any way. Posting recordings or slides to other websites without the express permission of the instructor will constitute copyright infringement.

Academic Honesty and Plagiarism

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 Mississauga is a strong signal of each student's individual academic achievement. As a result, UTM treats cases of cheating and plagiarism very seriously.

The University of Toronto's Code of Behaviour on Academic Matters outlines behaviours that constitute academic dishonesty and the process for addressing academic offences. Potential offences include, but are not limited to:

In papers and assignments:

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

On tests and exams:

1. Using or possessing unauthorized aids.
2. Looking at someone else's answers during an exam or test.
3. Misrepresenting your identity.

In academic work:

1. Falsifying institutional documents or grades.
2. Falsifying or altering any documentation required, including (but not limited to) doctor's notes.

With regard to remote learning and online courses, UTM wishes to remind students that they are expected to adhere to **the Code of Behaviour on Academic Matters** regardless of the course delivery method. By offering students the opportunity to learn remotely, UTM expects that students will maintain the same academic honesty and integrity that they would in a classroom setting. Potential academic offences in a digital context include, but are not limited to:

Remote assessments:

1. Accessing unauthorized resources (search engines, chat rooms, Reddit, etc.) for assessments.

2. Using technological aids (e.g. software) beyond what is listed as permitted in an assessment.
3. Posting test, essay, or exam questions to message boards or social media.
4. Creating, accessing, and sharing assessment questions and answers in virtual “course groups.”
5. Working collaboratively, in-person or online, with others on assessments that are expected to be completed individually.

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

Academic Rights

You, as a student at UTM, have the right to:

- Receive a syllabus by the first day of class.
- Rely upon a syllabus once a course is started. An instructor may only change marks’ assignments by following the University Assessment and Grading Practices Policy provision 1.3.
- Refuse to use turnitin.com (you must be offered an alternative form of submission).
- Have access to your instructor for consultation during a course or follow up with the department chair if the instructor is unavailable.
- Ask the person who marked your term work for a re-evaluation if you feel it was not fairly graded. You have up to one month from the date of return of the item to inquire about the mark. If you are not satisfied with a re-evaluation, you may appeal to the instructor in charge of the course if the instructor did not mark the work. If your work is remarked, you must accept the resulting mark. You may only appeal a mark beyond the instructor if the term work was worth at least 20% of the course mark.
- Receive at least one significant mark (15% for H courses, 25% for Y courses) before the last day you can drop a course for H courses, and the last day of classes in the first week of January for Y courses taught in the Fall/Winter terms.
- Submit handwritten essays so long as they are neatly written.
- Have no assignment worth 100% of your final grade.
- Not have a term test worth more than 25% in the last two weeks of class.
- Retain intellectual property rights to your research.
- Receive all your assignments once graded.
- View your final exams. To see a final exam, you must submit an online Exam Reproduction Request within 6 months of the exam. There is a small non-refundable fee.
- Privacy of your final grades.
- Arrange for representation from Downtown Legal Services (DLS), a representative from the UTM Students’ Union (UTMSU), and/or other forms of support if you are charged with an academic offence.

Equity Statement

The University of Toronto is committed to equity and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect. As a course instructor, I will neither condone nor tolerate behaviour that undermines the dignity or self-esteem of any individual in this course and wish to be alerted to any attempt to create an intimidating or hostile environment. It is our collective responsibility to create a space that is inclusive and welcomes discussion. Discrimination, harassment and hate speech will not be tolerated. If you have any questions, comments, or concerns you may contact the UTM Equity and Diversity officer at edo.utm@utoronto.ca or the University of Toronto Mississauga Students’ Union Vice President Equity at vpequity@utmsu.ca.

Please note that this outline is subject to change depending on the needs of the class (we may need additional time to cover a topic). Any changes to the syllabus will be announced in class one week before.

Course Outline

Date	Topic	Readings
Sept. 9	Why Study Statistics, Introduction to Descriptive Statistics	Chapter 1
Sept. 10	Descriptive Statistics; Frequency Distributions; Describing Frequency; Distributions	Chapter 2
Sept. 16	Descriptive Statistics; Central Tendency & Variability Describing Samples	Chapter 3
Sept. 17	Probability I	Chapter 4
Sept. 23	Probability II	Chapter 5
Sept. 24	Binomial Distribution	Chapter 5
Sept. 30	Hypothesis Testing using the Binomial Distribution	Chapter 6
Oct. 1	Hypothesis Testing continued Power of a Test using the Binomial Distribution	Chapter 6
Oct. 7	Power of a Test using the Binomial Distribution	Chapter 6
Oct. 8	Experimental Design	Chapter 7
Oct. 21	Quiz 1	
Oct. 22	Nonparametric Stats: The sign test	Chapter 8
Oct. 28	Nonparametric Stats: Mann Whitney U test, Wilcoxin test	Chapter 8
Oct. 29	Continuous measures and probability	Chapter 9
Nov. 4	Areas under the normal	Chapter 9
Nov. 5	Central Limit Theorem Hypothesis Testing using the normal	Chapter 10
Nov. 11	Single-group designs (z-tests, t-tests, and the median test)	Chapter 11
Nov. 12	Determining statistical power in single-group designs, Within-participant designs	Chapter 11
Nov. 18	Between-participant designs: 2 groups	Chapter 12
Nov. 19	The equal-variance assumption in 2 group designs	Chapter 12
Nov. 25	Quiz 2	
Nov. 26	Normal approximations to the binomial distribution, sign test, Mann Whitney test, and Wilcoxin test	Chapter 13
Dec. 2	Selecting the appropriate statistical analysis for one and two group designs	Chapter 14
Dec. 3	Review	
In order to receive full credit for a module, each module must be completed on or before the date specified below.		
Module 1 - Sept 22 (3 points), 2 – Sept 29 (3points), 3 – Oct 6 (3 points), 4 – Oct 19 (3 points), 5 – Nov 10 (3 points), 6 – Nov 17 (3 points) , 7 – Nov 24 (3 points), 8 – Dec 2 (5 points)		