

PSY202H5S - Research Design and Analysis in Psychology II

Tuesday 11:00am – 1:00pm **Online Synchronous**
 Wednesday 11:00am – 12:00pm **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 Q&A function. A TA will be monitoring the Q&A line (which is private) and convey the questions to the lecturer, who will attempt to answer them. Office hours will be virtual only and available over Zoom. All test, including the final, will be online synchronous..

- **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
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Office hours: Virtual via zoom
Office hours and contact information will be announced on Quercus

Tutorial Leader:
Mahmoud Bitar
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Course Description and Evaluation

In this course we will continue to build on the theory and techniques covered in PSY202H5S.

Consequently, students should make sure that they are conversant with this material. The topics in research design and data analysis that we will cover in this course are those that are needed to handle the material in more advanced psychology courses. As such, we will illustrate these statistical concepts with examples that you might encounter in advanced courses. The final grade will be the sum of the grades in two quizzes (**20 points** each), 7 computer modules (**28 points**), and the final exam (**30 points**). To receive full credit for a computer module you must successfully complete it before the due date. There are no exceptions to this rule. In addition, prior to each quiz, you will be given a set of practice questions. If you write down the answers to these questions and bring them to your tutorial leader or to the instructor, during office hours, they will go over your answers with you. You are not required to submit answers to the practice questions and you will not receive a grade or credit for them. The tutorials will supplement and expand on the lecture material, review problems and their solutions, and provide you with the opportunity to ask questions about the material in the course. **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 PSY202 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 PSY202 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 April 9, 2021.

Reading Material

Schneider, *Mastering the "black box" of statistics and experimental design*.

This is the same electronic book that was used last semester in Psy 201. If you did not buy the book last semester, it can be purchased and downloaded from the Wolfram bookstore. Please go to Quercus (see Course Webpage below) for instructions on how to purchase and download the book, or go directly to the book's website for instructions (<http://sites.google.com/view/the-black-box-of-statistics/home>).

Instructions on how to operate the modules are also to be found at the book's website. The book, as well as the homework modules, run on the Wolfram CDF Player platform. This platform can be downloaded for free from the Wolfram website. For instruction on how to download this free platform, go to the book's website (listed above).

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

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/>

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

Office Hours and Email Communication

Please note that there are eleven virtual office hours per week in this course. We welcome students during these hours to discuss any issue related to experimental design and statistics. We are happy to discuss any issues concerning the course, and the course material during these office hours. The tutors will respond to emails 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 permissible; 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 source depending on the specific facts of each situation, and are protected by copyright. In this course, you are permitted to download session videos and materials for your own academic use, but you should not copy, share, or use them for any other purpose 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.

Course Outline

Date	Topic	Readings
January 12	Review: Concepts and Principles Underlying Statistical Testing; Confidence Intervals I	Review: Chapters 1-14 Confidence Intervals: Chapter 15
January 13	Confidence Intervals II: One and two group designs (continuous and binary data)	Chapter 15
January 19	Hypotheses concerning variances: Testing whether a sample variance equals a population variance	Chapter 16
January 20	Hypotheses concerning variances: Testing whether two sample variances are equal	Chapter 16
January 26	Estimating sources of variance in single group designs, with and without multiple measures per participant	Chapter 17
January 27	One-way ANOVA, single-factor, between-participants design-I	Chapter 18
February 2	ANOVA for single-factor, between-participants design - II	Chapter 18
February 3	ANOVA for single-factor, between-participants design: post-hoc tests	Chapter 18
February 9	ANOVA for single-factor, within-participant design, single measure per participant per condition	Chapter 19
February 10	ANOVA for two-factor, completely crossed between subjects design, single measure per subject	Chapter 20
February 23	Quiz 1	
February 24	Single factor, within-participant designs with more than one measure per participant in each treatment	Chapter 20

March 2	Non-parametric ANOVAs : Single factor, between-participants: one measure per subject	Chapter 21
March 3	Non-parametric ANOVAs : Single factor, within-participant: one measure per participant per condition	Chapter 21
March 9	Design and Analysis of Multi-factor experiments	
March 10	Linear Regression-I	Chapter 22
March 16	Linear Regression-II	Chapter 22
March 17	Linear Regression – How to handle violations of assumptions and non-linear functions	Supplement 6
March 23	Correlation - I	Chapter 23
March 24	Correlation -II	Chapter 23
March 30	Quiz 2	
March 31	Analysis of Categorical Data- I	Chapter 24
April 6	Analysis of Categorical Data- II	Chapter 24
April 7	Review for final Exam	

Completion dates and point counts for the modules

Module 9 (3 points): January 25; Module 10 (3 points): February 1; Module 11 (5 points): February 15; Module 12 (5 points): March 15; Module 13 (5 points): March 22; Module 14(5 points): March 28; Module 15 (2 points): April 9.