

# PSY201H5F – Research Design and Analysis I

Tuesday 9:00am – 11:00am

Wednesday 10:00am – 11:00am

Room Location: DV 2074 (Davis Building)

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## Contact Information

**Prof. Bruce Schneider**

Office: CCT 4073

**Office Hours:**

Tuesday: 2-4

Wednesday: 2-4

**Tutorial Leaders:**

Maxwell Barranti

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**Office Hours: TBA**

**Swathi Swaminathan**

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**Office Hours: TBA**

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## Course Description

The topics in research design, probability theory, and descriptive and inferential statistics that we will cover in this course are those which 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.

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## Reading Material

Schneider, *Mastering the “black box” of experimental design and statistical analysis*.

This is an electronic book. It is available for download on the course webpage which you can access through Blackboard (see Course Webpage below). It runs, as do the homework modules, on the Mathematica platform. This platform is available on the UTM computer system. Alternatively, you can obtain your own copy of Mathematica for installation on your laptop or desktop computer. This will allow you to read the book at your convenience. For instructions with respect to downloading the book, and/or the Mathematica platform, please go to the webpage for the course.

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## 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 (34 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. 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, we 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 any credit for them. Problem solutions, quiz reviews, and selected topics will be discussed during tutorial sessions.

**The quizzes will be given from 9-11 on the dates specified on the outline below.**

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## Course Webpage

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

Note: You don't need to create a new login for Blackboard; 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 Blackboard. If you have any general questions regarding Blackboard, please visit the following help site: <http://www.portalinfo.utoronto.ca/students.htm>

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## **IMPORTANT COURSE POLICIES \*\*PLEASE READ\*\***

### **Office Hours and Email Communication**

Please note that there are eight office hours per week in this course. We welcome students during these hours to discuss any issue related to experimental design and statistics. We will also accept phone calls from students during these hours. However, students who show up in person will have priority and we will not answer the phone or return calls during office hours if there are students waiting to talk to us. The instructor will not answer email questions at any time. The tutors will respond to emails ([psy201utm@gmail.com](mailto:psy201utm@gmail.com)) only during their office hours and only if there is no one present and no phone calls to take.

### **Missed Test Special Consideration Request Process**

**No make-up tests are offered in this course.** If you miss a quiz without adequate excuse, you will receive a mark of zero for that quiz. However, with an adequate excuse your remaining quiz will constitute 30% of your final grade and the final exam will account for 44% of your final grade. **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>.

Students are to submit original supporting documentation (e.g., medical certificates, accident reports, etc.) to the Psychology Academic Counselor or drop it in the drop box located outside the Psychology office, Deerfield Hall, 4th Floor. Students have up-to one week from the date of the missed test to submit request. Late submissions will NOT be considered without a letter of explanation specifying and documenting the reasons for the lateness.

Medical certificates or physician's notes must be completed by the Physician and MUST include the statement "This Student [name] was unable to write the test on [date(s)] for medical reasons". This documentation must show that the physician was consulted within one the day of the missed term test. A statement merely acknowledging a report of illness made by the student to the physician is NOT acceptable. For further information on this procedure please see: <http://www.utm.utoronto.ca/psychology/undergraduate-studies/missed-testslate-submissions>

If you missed your test/assignment deadline for a reason connected to your registered disability, please be advised that the department will accept documentation supplied by the UTM AccessAbility Resource Centre.

**IMPORTANT:** The Department of Psychology verifies the authenticity of medical certificates by contacting medical offices. Students are NOT to make any changes or alteration to completed medical certificates. Students who submit forged or altered documentation are subject to severe academic penalties.

### **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.**

Original supporting documentation (e.g., medical certificates, accident reports, etc.) must be submitted to the Psychology Academic Counselor or dropped off in the drop box located outside the Psychology office Deerfield Hall, 4th Floor. Students are expected to submit requests to the Department before the last day of the term, unless demonstrably serious reasons prevent them from doing so. In the event of an illness, medical certificates or doctor's notes must confirm that student was ill on the due date of the assignment (for a one-day extension). For a longer extension, documentation must specify the full duration during which academic work could not be carried out.

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>

## **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**

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/>

## **Academic Honesty and Plagiarism**

Honesty and fairness are considered fundamental to the university's mission, and, as a result, all those who violate those principles are dealt with as if they were damaging the integrity of the university itself. When students are suspected of cheating or a similar academic offence, they are typically surprised at how formally and seriously the matter is dealt with -- and how severe the consequences can be if it is determined that cheating did occur. The University of Toronto treats cases of cheating and plagiarism very seriously. Please take the time to review the Academic Integrity website:

<http://www.utm.utoronto.ca/academic-integrity/students>.

- Common trends in academic offences:
- Plagiarizing/concocted references
- Collaboration/unauthorized assistance
- Purchasing work
- Recycling work - "double-dipping"
- Resubmitting of altered work for re-grading
- Electronic devices (cell phones) or any unauthorized aids
- Altering medical certificates and UofT documents

From the Code of Behaviour on Academic Matters: "It shall be an offence for a student to knowingly: represent as one's own any idea or expression of an idea or work of another in any academic examination or term test or in connection with any other form of academic work, i.e. to commit plagiarism. Wherever in the Code an offence is described as depending on "knowing", the offence shall likewise be deemed to have been committed if the person ought reasonably to have known." All students must refer to this website to obtain information on what constitutes plagiarism.

<http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize>.

If questions arise after reading the material on the website, consult your instructor.

**Plagiarism will not be tolerated.**

## 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](mailto:edo.utm@utoronto.ca) or the University of Toronto Mississauga Students' Union Vice President Equity at [vpequity@utmsu.ca](mailto:vpequity@utmsu.ca).

## 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 25% or more 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.

**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. 5	Why Study Statistics, Introduction to Descriptive Statistics	Chapter 1
Sept. 6	Descriptive Statistics; Frequency Distributions; Describing Frequency; Distributions	Chapter 2
Sept. 12	Descriptive Statistics; Central Tendency & Variability Describing Samples	Chapter 3
Sept. 13	Probability I	Chapter 4
Sept. 19	Probability II	Chapter 5
Sept. 20	Binomial Distribution	Chapter 5
Sept. 26	Hypothesis Testing using the Binomial Distribution	Chapter 6
Sept. 27	Hypothesis Testing continued Power of a Test using the Binomial Distribution	Chapter 6
Oct. 3	Power of a Test using the Binomial Distribution	Chapter 6
Oct. 4	Experimental Design	Chapter 7
Oct. 17	Quiz 1	
Oct. 18	Nonparametric Stats: The sign test	Chapter 8
Oct. 24	Nonparametric Stats: Mann Whitney U test, Wilcoxin test	Chapter 8
Oct. 25	Continuous measures and probability	Chapter 9
Oct. 31	Areas under the normal	Chapter 9
Nov.1	Central Limit Theorem Hypothesis Testing using the normal	Chapter 10
Nov. 7	Single-group designs (z-tests, t-tests, and the median test)	Chapter 11
Nov. 8	Determining statistical power in single-group designs, Within-participant designs	Chapter 11
Nov. 14	Between-participant designs: 2 groups	Chapter 12
Nov. 15	The equal-variance assumption in 2 group designs	Chapter 12
Nov. 21	Quiz 2	
Nov. 22	Normal approximations to the binomial distribution, sign test, Mann Whitney test, and Wilcoxin test	Chapter 13
Nov. 28	Selecting the appropriate statistical analysis for one and two group designs	Chapter 14
Nov. 29	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 21 (3 points), 2 – Sept 28 (3points), 3 – Oct 5 (3 points), 4 – Oct 16 (3 points), 5 – Nov 6(3 points), 6 – Nov 13 (3 points) , 7 – Nov 20 (3 points), 8 – Dec 4 (5 points)