Faculty of Health
Department of Psychology
PSYC 2020 6.0 G: STATISTICAL METHODS I AND II
Year 2021-2022
Pre-recorded Content Lectures: Posted weekly on eClass
Live Community Meetings: Thursdays at 2:30pm via Zoom

This course will consist of both **asynchronous** (completed individually on your own time) and **synchronous** (completed as a community at a scheduled day and time) components.

Asynchronous pre-recorded content lectures: Pre-recorded content-based lectures will be shared each week through eClass. These pre-recorded lectures will provide instruction of course material. <u>Students are expected to have viewed the pre-recorded lectures before attending the live (synchronous) community meeting each week.</u>

Synchronous community meetings: Live weekly meetings for the course community (students, teaching team) will be held via Zoom each Thursday at 2:30pm for 1.5 – 2 hours. During these meetings the instructor will address student questions about the week's lecture content. Students can submit questions for this session through eClass each week by 9:00am the day of the community meeting (Wednesday). Additional demonstrations or application of content will also be covered during community meetings. Recordings of live community meetings will be posted to eClass. <u>Live attendance to these meetings is strongly recommended and has previously been linked with better performance in the course.</u> **No live community meeting will be held during weeks when a Quiz is scheduled.**

Students are expected to spend **a minimum of 5 - 6 hours per week** on this course, including watching pre-recorded lectures, attending live community meetings, and completing review & practice problems on their own time.

Instructor and T.A. Information

Instructor: Dr. Jodi Martin
Office Hours: By appointment (see Communications & Contact Info folder on eClass to book)
Email: jodimart@yorku.ca

T.A.	Shaylea Badovinac	Stephanie Bell
Email	sdbadov@yorku.ca	bellsm@yorku.ca
Office Hours	See Communications & Contact Info folder on eClass to book appointments.	

When sending emails to the teaching team please include PSYC2020G in the subject line and your full name in the email.

Course Prerequisite(s): Course prerequisites or co-requisite are strictly enforced

- HH/PSYC 1010 6.00 (Introduction to Psychology), with a minimum grade of C.

Course Credit Exclusions

Please refer to [York Courses Website](#) for a listing of any course credit exclusions.

Course website: [eClass](#)

All course materials will be available through eClass. This includes important details about the course format, weekly pre-recorded lecture videos & lecture slides, question submissions for weekly live community meetings, Zoom link to weekly live community, quizzes, review & practice problems, Apply It and assignment instructions and submissions, and appointment sign-ups for instructor & TA office hours. All communications from instructor to students will also take place through eClass's Course Announcements.

It is absolutely necessary that you are regularly accessing eClass to be successful in this course. "I didn't know it was on eClass" or "I don't know how to use eClass" are not acceptable excuses for missing any course component. Following our initial orientation, it is the student's responsibility to review and become comfortable with using eClass for the purposes of this course.

Course Description

Statistical literacy is an important skill obtained through an undergraduate education in psychology. This course introduces students to the basic concepts of both descriptive and inferential statistics. We will take a hands-on, skills-based approach aimed at facilitating students' understanding of the use and interpretation of various statistical methods. Students will obtain both conceptual and applied knowledge in a range of topics including data visualization, central tendency and variability, probability and sampling distributions, hypothesis testing, and effect sizes as well as both parametric and non-parametric statistical methods. Students will gain hands-on data management and analytic experience working with data by using software (jamovi, R) to run statistical analyses and by interpreting their results.

Program Learning Outcomes

Upon completion of this course, students should be able to:

1. Compute descriptive statistics and inferential statistics.
2. Interpret and report the results of descriptive statistics and inferential statistics.
3. Distinguish between the role of descriptive statistics and inferential statistics.
4. Compute inferential statistics for univariate linear models (ANOVA, regression).
5. Interpret and report the results of inferential statistics for univariate linear models.
6. Recognize the limits of inferential statistics.

Specific Learning Objectives

1. Differentiate between descriptive and inferential statistics
2. Provide examples of the different scales of measurement
3. Summarize, organize, and present the essential features of different data types numerically and graphically
4. Calculate relevant descriptive statistics such as measures of central tendency and variability for different variables
5. Generate statistical hypotheses (i.e., null and alternative) for various research scenarios.
6. Compute univariate inferential statistics and interpret their results (i.e.,t-tests, ANOVAs, chi-squares)
9. Discuss how effect size metrics and confidence intervals can supplement traditional approaches to hypothesis testing
10. Critically evaluate the results of statistical analyses in published psychology research

Required Software & Text

Software

Students are **required** to download the "solid" version of jamovi from www.jamovi.org. This software is required for students to complete activities and assignments in the course. Students are advised to download this software as soon as possible to be prepared for the start of the course.

Students are also **required** to download iClicker Reef (available through the iOS or Google Play Store, or at app.reef-education.com for non-mobile users) to participate during live community meetings. More information on how to enrol in this course through iClicker Reef is available in the "Live Meeting Participation" folder on eClass.

Textbook

There is no required text for this course. Activities and opportunities for practice will be provided to you through eClass.

Optional Textbooks to Support your Learning

You can consider the following FREE texts available to download online to supplement your learning in the course. **If you use one of these books, keep in mind that all quizzes will be based on lecture materials alone, not content of the texts (they are just for additional optional support).**

1) https://www.learnstatswithjamovi.com/

This book covers intro to statistics while also giving a lot of supplemental learning on using jamovi. Although this book goes far more in depth on some topics than is needed for this course, I would recommend it to supplement the application of your learning using jamovi, but also refer to the jamovi materials posted on eClass if you find this book too dense or intimidating.

2) https://open.umn.edu/opentextbooks/textbooks/an-introduction-to-psychological-statistics

This book covers general conceptual knowledge of statistics.

You can also consider the following options for PAID hard copy or e-books as optional supplemental material for the course:

1) Gravetter, F. J., & Wallnau, L. G. Statistics for the Behavioural Sciences. Belmont, CA: Wadsworth, Cengage Learning. (8th through 10th editions would be fine)

2) Howell, D.C. (2016). Fundamental statistics for the behavioral sciences (9th ed). Wadsworth Publishing, Cengage Learning.

Please note that if you purchase a textbook thinking it is required you may not be able to return it. Before buying the book, make sure you are aware of the seller's refund policy.

Course Requirements and Assessment:

Assessment	Date of Evaluation (if known)	Weighting
Live Meeting Participation	Ongoing (via iClicker)	5%
R Tutorials	Closes December 23	3%
Quiz 1	October 21	7.75%
Quiz 2	November 25	7.75%
Quiz 3	February 17	7.75%
Quiz 4	March 31	7.75%
Apply Its (x8)	Roughly every 2 weeks (see Course Schedule below)	16%
Assignment 1	December 6	20%
Assignment 2	April 10	25%
Total		**100%**

Description of Assessments (see also "*Missed Quizzes and Late Assignments"* below)

<u>**Live Meeting Participation**</u>

Students can earn participation points by responding to iClicker questions during our weekly live community meetings, up to a possible total of 5% of your final grade. More information about using iClicker for this course will be available in the "Live Meeting Participation" folder on eClass.

<u>**R Tutorials**</u>

Up to 3% participation points can be earned by completing a series of three (3) online tutorials introducing students to the statistical software, R. This software is used in upper year undergraduate statistics courses in the department and in most graduate school programs. Skills in using R are also highly coveted by some employers so can be useful even to those students with no intention of going to graduate school. These tutorials will build on skills and knowledge you will acquire in this course and will prepare you with additional analytical skills for performance in future courses and beyond. Participation points will be awarded for their completion. More information on how to access the tutorials will be posted in the "R Tutorials" folder on eClass.

Quizzes

Students will complete four (4) quizzes on eClass throughout the course. **Quizzes should be completed without consulting additional aids (e.g., course notes, web searches, lecture slides) and without consulting with other students.** Each quiz will be non-cumulative based on content from pre-recorded lectures and live community meetings and will focus on students' conceptual knowledge of statistics. Quizzes will be comprised of multiple choice questions be randomly selected from a large question bank so no two students will complete an identical quiz. **Quizzes will be available between 2:30pm and 5:00pm (Toronto time) on their scheduled date. Once started, students will have a specified period of time (i.e., not the full 2.5 hours) to complete the quiz but all quizzes will auto-submit at 5:00pm; students are advised to plan timing accordingly.** More information about quizzes will be available on eClass in the "Quizzes" folder.

Note: eClass outages will not be considered the fault of the student and the instructor will make adjustments to deadlines as needed to accommodate any such issues.

Apply Its

Students will complete eight (8) Apply Its throughout the course. These are brief low-stakes assignments (worth 2% each) that assess students' ability to apply course content to new situations, contexts, or data, and will scaffold skills required to complete larger assignments. **Apply Its can be completed individually or in pairs (groups of 2) should students prefer a team approach.** Apply Its will be due during a 4-day submission window (see Course Schedule below), students should treat the first day of this window as the deadline and the remaining 3 days as "bonus" time should it be needed. Completing Apply Its will typically require students to use the statistical software, jamovi. **Students will receive feedback on Apply Its that will aid them in completing the larger summative assignments**. More information will be provided on eClass in the "Apply Its" folder and in live meetings.

Assignments

Students will complete two summative assignments in this course. Assignments are to be completed outside of normal class time. Assignments should be completed individually unless otherwise specified by the professor. These assignments assess students' conceptual

understanding of course materials as well as their ability to apply knowledge through the conducting and interpreting of statistical analysis of data. Each assignment is cumulative and will require knowledge and skills developed throughout all preceding course modules. More information will be posted on eClass in the "Assignment Instructions & Submission" folder.

Assignment instructions will be provided well in advance of deadlines. It is recommended that students start assignments early and work on them gradually throughout the course as they gain the knowledge to do so.

Class Format and Attendance Policy

Course content will be delivered through both pre-recorded content lectures posted on eClass which students will watch on their own time and through weekly live community meetings on Zoom. Community meetings will be spent on Q&A on course content and opportunities to apply course content through practice problems; students will also have opportunities to earn participation points by answering iClicker questions. These meetings are also the main opportunity for students to interact both with each other and the teaching team as a community. **Attendance to live community meetings is strongly recommended.** These sessions will be recorded in order to accommodate students who are truly unable to attend (i.e., International students residing in other time zones, those with conflicting caregiving/parenting responsibilities). All recordings (both pre-recorded and of live community meetings) will remain available to students on eClass for the course's duration so students are able to review them as needed.

Grading as per Senate Policy

The grading scheme for the course conforms to the 9-point grading system used in undergraduate programs at York (e.g., A+ = 9, A = 8, B+ = 7, C+ = 5, etc.). Assignments and tests* will bear either a letter grade designation or a corresponding number grade (e.g. A+ = 90 to 100, A = 80 to 89, B+ = 75 to 79, etc.)

For a full description of York grading system see the York University Undergraduate Calendar – Grading Scheme for 2021-22

Missed Tests/Midterm Exams/Late Assignment

Missed Quizzes

For any missed quiz students MUST complete the Missed Quiz form found in the "Quizzes" folder on eClass. Failure to complete the form within 48 hours of the original quiz dates will result in a grade of 0 for the missed quiz. At this time, due to COVID-19 an Attending Physician's Statement (APS) is not required, however, a reason or explanation for missing a quiz must be provided.

Once you have notified us of a missed quiz a TA will contact you to schedule a make up quiz. If you miss your scheduled make up quiz, you must again completed the Missed Quiz form with a

reason and the weighting will be redistributed across the remaining assessments in the relevant category.

Late Apply Its

Apply Its that are not submitted during the 4-day submission window will receive a grade of 0 and no extensions will be granted, except in extreme circumstances. Apply It deadlines each span a 4-day submission window, which acts as built-in extra time for their completion. This does not mean that the final day of a submission window is the actual deadline, rather, students should submit their Apply It at a time during the submission window that is most convenient for them.

Late Assignments

Both assignments have a 2-day grace period where students can submit after the deadline at no penalty. Assignments submitted beyond this 2-day grace period will receive a 5% per day penalty up to a total of 3 days (i.e., up to 5 days after original due date). No assignments will be accepted 5 days beyond their due date; assignments more than 5 days late will receive a grade of 0.

> Example: The deadline for Assignment 1 is December 6th at 11:59pm. If additional time is needed (due to falling behind in the course, having a lot of deadlines around then, perfectionism, etc.), students can submit Assignment 1 with no late penalty until December 8th at 11:59pm (you do not have to notify the teaching team to take advantage of the 2-day grace period). Assignments submitted December 9th, 10th, or 11th will receive a 5% per day late penalty (e.g., 5%, 10%, 15% penalty, respectively). If a student has not submitted Assignment 1 by December 11th at 11:59pm they will receive a grade of 0.

This policy holds for all both Assignment 1 and Assignment 2 and their respective deadlines.

Exceptions to this policy can be made for truly exceptional circumstances – should you think you have such a circumstance please email the instructor as soon as possible to discuss.

Add/Drop Deadlines

For a list of all important dates please refer to: Fall/Winter 2021-22 Important Dates

	Fall (Term F)	Year (Term Y)	Winter (Term W)
Last date to add a course **without permission** of instructor (also see Financial Deadlines)	Sept. 21	Sept. 21	Jan. 23
Last date to add a course **with permission** of instructor (also see Financial Deadlines)	Oct. 5	Oct. 26	Feb. 7
Drop deadline: Last date to drop a course without receiving a grade (also see Financial Deadlines)	Nov. 12	Feb. 11	18-Mar

Course Withdrawal Period (withdraw from a course and receive a grade of "W" on transcript – see note below)	Nov. 13 - Dec. 7	Feb. 12 - April 10	March 19 - April 10

Add and Drop Deadline Information

There are deadlines for adding and dropping courses, both academic and financial. Since, for the most part, the dates are **different**, be sure to read the information carefully so that you understand the differences between the sessional dates below and the Refund Tables.

You are strongly advised to pay close attention to the "Last date to enrol without permission of course instructor" deadlines. These deadlines represent the last date students have unrestricted access to the registration and enrolment system.

After that date, you must contact the professor/department offering the course to arrange permission.

You can drop courses using the registration and enrolment system up until the last date to drop a course without receiving a grade (drop deadline).

You may withdraw from a course using the registration and enrolment system after the drop deadline until the last day of class for the term associated with the course. When you withdraw from a course, the course remains on your transcript without a grade and is notated as 'W'. The withdrawal will not affect your grade point average or count towards the credits required for your degree.

Electronic Device Policy

This course will be delivered in an online format and therefore electronic devices (e.g., tablets, laptops) are permitted/required during class time for course-related purposes. It is expected that students will complete quizzes in a manner that does not include consulting an unauthorised source during the quiz. In other words, quizzes in this course are **not** open-book and students should complete them without referring to course notes, webpages, or other resources that are not explicitly provided by the professor.

Any sharing of screenshots and/or personal feedback received from completing course assessments will be considered a violation of the electronic device policy and there will be consequences for this behaviour. The unauthorized sharing of these details or any other course materials by any means (e.g., What's App group, student forum, Reddit, Facebook group etc.) is strictly prohibited.

Academic Integrity for Students

York University takes academic integrity very seriously; please familiarize yourself with Information about the Senate Policy on Academic Honesty.

It is recommended that you review Academic Integrity by completing the Academic Integrity Tutorial and Academic Honesty Quiz

Test Banks

The offering for sale of, buying of, and attempting to sell or buy test banks (banks of test questions and/or answers), or any course specific test questions/answers is not permitted in the Faculty of Health. Any student found to be doing this may be considered to have breached the Senate Policy on Academic Honesty. In particular, buying and attempting to sell banks of test questions and/or answers may be considered as "Cheating in an attempt to gain an improper advantage in an academic evaluation" (article 2.1.1 from the Senate Policy) and/or "encouraging, enabling or causing others" (article 2.1.10 from the Senate Policy) to cheat.

This includes the sharing of screenshots and/or personal feedback received from completing course quizzes online. The sharing of these details by any means (e.g., What's App group, Discord, SnapChat, Reddit, etc.) is strictly prohibited.

Course Group Chats

Participating in group chats other than the Student Forum on eClass (e.g., What'sApp, Discord, Reddit, SnapChat, etc.) in the interest of forming a course community that is solely for the students enrolled in this course is permitted, but students should proceed with caution for the following reasons:

1. The professor, teaching assistants, department and York University overall have no jurisdiction over adverse behaviours (e.g., hacking, bullying, etc.) that may occur in these contexts. That means that it is difficult for the professor monitor if an unsafe situation arises. If such an event occurs, students are advised to shut down the group and form a new one. You should also inform the professor should the adverse behaviour be committed by another student in the course. To reduce the risk of external individuals joining a course chat group please only share links to the group through private means (i.e., don't post the link publicly on Reddit) and share only with other members of PSYC2020G.

2. Participation in illicit activity (e.g., cheating) that occurs in such groups may put your academic integrity at risk. Sharing of answers or asking for an answer on a graded quiz, Apply It, or assignment through such a group chat is considered an act of academic dishonesty and is strictly prohibited. Any violations will be reported to the Department of Psychology and are subject to consequences (e.g., a failing grade on the assessment in question, a grade of 0 on the particular assessment, a failing grade in the course, etc.). It is strongly recommended that the administrator of any such group(s) for the course suspend the chat group during scheduled quiz times, and that anyone requesting or sharing answers on Apply Its or assignments through the group chat is blocked/removed from the chat by the administrator.

3. The sharing of screenshots of emails or answers provided by the professor or other members of the teaching team through emails is not permitted in course community

group chats. All email communications between student and professor/teaching team are considered private and should not be shared without express permission from the professor/teaching team.

Academic Accommodation for Students with Disabilities

While all individuals are expected to satisfy the requirements of their program of study and to aspire to do so at a level of excellence, the university recognizes that persons with disabilities may require reasonable accommodation to enable them to do so. The university encourages students with disabilities to register with Student Accessibility Services (SAS) to discuss their accommodation needs as early as possible in the term to establish the recommended academic accommodations that will be communicated to Course Directors as necessary. Please let me know as early as possible in the term if you anticipate requiring academic accommodation so that we can discuss how to consider your accommodation needs within the context of this course.

https://accessibility.students.yorku.ca/

Excerpt from Senate Policy on Academic Accommodation for Students with Disabilities

1. Pursuant to its commitment to sustaining an inclusive, equitable community in which all members are treated with respect and dignity, and consistent with applicable accessibility legislation, York University shall make reasonable and appropriate accommodations in order to promote the ability of students with disabilities to fulfill the academic requirements of their programs. This policy aims to eliminate systemic barriers to participation in academic activities by students with disabilities.

All students are expected to satisfy the essential learning outcomes of courses. Accommodations shall be consistent with, support and preserve the academic integrity of the curriculum and the academic standards of courses and programs. For further information please refer to: York University Academic Accommodation for Students with Disabilities Policy.

Course Materials Copyright Information

These course materials are designed for use as part of the PSYC2020G course at York University and are the property of the instructor unless otherwise stated. Third party copyrighted materials (such as book chapters, journal articles, music, videos, etc.) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law.

Copying this material for distribution (e.g. uploading material to a commercial third-party website) may lead to a violation of Copyright law. Intellectual Property Rights Statement.

Course Schedule

**FALL SEMESTER**			
Week	**Live Mtg Date**	**Topic**	**What's due when?**
1	Sept 9	Course Overview eClass Orientation	
2	Sept 16	Introduction to Statistics Intro to jamovi (in Zoom meeting)	
3	Sept 23	Examining Data: Tables & Figures	**Apply It 1 (Sept 24 – 27)**
4	Sept 30	Measures of Central Tendency & Variability	
5	Oct 7	z-scores & the Normal Distribution	**Apply It 2 (Oct 8 – 12)**
*FALL READING WEEK*			
6	Oct 21	**Quiz 1**	
7	Oct 28	Probability & Intro to Hypothesis Testing	
8	Nov 4	Errors in Hypothesis Testing, Statistical Power, & Effect Size	**Apply It 3 (Nov 5 – 8)**
9	Nov 11	One-sample t-test	
10	Nov 18	Independent & Dependent Samples t-tests	**Apply It 4 (Nov 19 – 22)**
11	Nov 25	**Quiz 2**	
12	Dec 2	Assignment Q&A, Semester Wrap up	**Assignment 1 (Dec 6) (+ 2 day grace period)**

WINTER SEMESTER			
Week	Live Mtg Date	Topic	What's due when?
1	Jan 13	Semester I Review Semester II Preview	
2	Jan 20	One-way ANOVA + review of Semester I	**Apply It 5 (Jan 21 – 24)**
3	Jan 27	Repeated measures ANOVA	
4	Feb 3	Factorial ANOVA	**Apply It 6 (Feb 4 – 7)**
5	Feb 10	Non-parametric Alternatives to ANOVA	
6	Feb 17	**Quiz 3**	
WINTER READING WEEK			
7	Mar 3	Chi-square Tests	
8	Mar 10	Correlation	**Apply It 7 (Mar 11 – 14)**
9	Mar 17	Take a mental health day! (no live mtg)	
10	Mar 24	Linear Regression	**Apply It 8 (Mar 25 – 28)**
11	Mar 31	**Quiz 4**	
12	Apr 7	Assignment Q&A, Course wrap up	**Assignment 2 (Apr 10) (+2 day grace period)**