

Faculty of Health
Department of Psychology
PSYC 2021 3.0 B: STATISTICAL METHODS I
Tuesdays & Thursdays at 2:30pm
Vari Hall C

This course will be delivered using a *flipped classroom approach*. This approach involves both asynchronous (pre-recorded) and synchronous, in-person components. Students are responsible for watching pre-recorded lectures that deliver instruction of course material. Students are also responsible for attending twice weekly in-person classes in which content from the pre-recorded lectures will be applied through iClicker questions, Q&A, and completion of practical problems; support and feedback will be provided from instructor and teaching assistant during in-person class time. **Students are expected to have watched the pre-recorded lecture(s) for each class before attending each in-person session.**

For more information about what to expect in a flipped classroom and the benefits of this approach, watch this [2.5 minute video](#)!

The Summer 1 semester offers a condensed, 6-week version of this course. Students are expected to spend **an average of 12 to 15 hours per week** on this course, including the time spent watching pre-recorded lectures, attending in-person sessions, completing review & practice problems and activities, and Apply Its. Completing assignments and studying for quizzes may require some additional time around their respective deadlines.

****Note that masks remain mandatory in all indoor spaces on campus, including classrooms.** Students are expected to properly wear masks at all times during twice-weekly in-person classes. For more information see [York's masking protocol](#). Students who fail the YU Screen or are otherwise feeling unwell should not attend in-person classes until their symptoms end.

Instructor and T.A. Information

Instructor: Dr. Jodi Martin

Office Hours: By appointment (use schedule link in Communications 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 schedule link on eClass to book	Email to set appointments

****ALL OFFICE HOURS WILL BE HELD AS ZOOM MEETINGS UNLESS SPECIAL ARRANGEMENTS HAVE BEEN MADE****

When sending emails to the teaching team please include PSYC2021B in the subject line and your full name somewhere in the email.

Course Prerequisite(s): Course prerequisites are strictly enforced

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

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 & schedule, weekly pre-recorded lecture videos & slides, Q&A submissions for twice weekly classes, online 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 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 with the course eClass page, it is the students' 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 & variability, probability & sampling distributions, hypothesis testing, and effect sizes as well as both parametric and non-parametric statistical methods. Students will gain hands-on analytic experience working with real data by using software (jamovi) 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.

Topics Covered

- Defining Key Statistical Terms
- Frequency Distributions
- Central Tendency
- Variability
- z-Scores/Normal Distribution
- Probability
- Sampling Distribution
- Confidence Intervals
- Power
- Effect Size
- Hypothesis Testing
- Correlation (Pearson at minimum)
- χ^2 Goodness of Fit
- χ^2 Test of Independence
- One-sample t test
- Introduce independent and dependent designs

**Effect size is included as part of all inferential statistics covered in this course.*

Specific Learning Objectives

1. Compare and contrast 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 types of variables
5. Generate research questions and statistical hypotheses (i.e., null and alternative) for different research scenarios
6. Explain the process underlying hypothesis testing and how researchers use this process to test hypotheses and answer research questions
7. Conduct and interpret the results of various statistical tests using statistical software (jamovi)

Required Software & Text

Students are **required** to download the “solid” version of jamovi (version 2.2.5) 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 “iClicker Participation” folder on eClass.

Students should expect to bring a laptop to the twice weekly in-person classes in order to complete the applied activities that may require you to use jamovi. If you do not have your own laptop you will be “buddied up” with someone who does.

There is no required text for this course. Activities and opportunities for practice will be provided to you in pre-recorded lectures, live community meetings, and 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, Apply Its and Assignments will be evaluated based on the content delivered through lectures and classes, 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
Quiz 1	May 26	15%
Quiz 2	June 16	15%
Apply It 1	May 20 – 22	5%
Apply It 2	June 3 – 5	5%
Apply It 3	June 10 - 12	5%
Assignment 1	May 29 (+ 1 day grace period)	25%
Assignment 2	June 19 (+ 1 day grace period)	25%
Participation (iClicker)	Each class	5%
Total		100%

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

Participation

Students can earn participation points by responding to iClicker questions during twice weekly classes, up to a possible total of 5% of your final grade. All students will get 2 “freebies” making space for missing two class’ iClicker with no penalty. More information about using iClicker for this course will be available in the “iClicker Participation” folder on eClass.

Quizzes

Students will complete two (2) **online** quizzes via eClass throughout the course. **Quizzes should be completed without reliance on 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 preceding classes 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 through eClass between 2:30pm and 5:00pm (Toronto time) on their scheduled dates. 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.

Note: eClass outages during quizzes 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 three (3) Apply Its throughout the course. These are brief low-stakes assignments (worth 5% each) that assess students’ ability to apply course content to new situations, contexts, or data, and will scaffold skills required to complete larger course assignments. **Apply Its can be completed in pairs should students prefer a team approach.** Apply Its will be due during a 3-day submission window (see schedule on page 11), students

should treat the first day of this window as the deadline and the remaining 2 days as “bonus” time should it be needed. Completing Apply Its will usually 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 through the “Apply Its” folder on eClass.

Assignments

Students will complete two summative assignments in this course. Assignments should be completed individually. 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 released about each assignment on eClass. Instructions, data, and submission links for both assignments will be accessible through eClass.

Note: Assignment instructions will be provided 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 two in-person sessions held each week on Tuesday and Thursday at 2:30pm. In-person sessions will be spent on Q&A, iClicker quizzing, and opportunities to apply course content through the completion of practice problems with the instructor and TAs available to provide feedback and guidance. **Students are expected to watch pre-recorded lecture(s) corresponding to each in-person session before the in-person session.**

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 Quizzes, Late Apply Its and Late Assignments

Missed Quizzes

For any missed quiz students MUST complete the Missed Quiz form found in the Communication & Contact Info 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 an evaluated component in the course must be provided.

Once you have notified us of a missed quiz a TA will contact you to schedule a make up quiz (which will also be held online). 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 3-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 3-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.

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.

Late Assignments

Both assignments have a 1-day grace period where students can submit after the deadline at no penalty. Assignments submitted *beyond this 1-day grace period* will receive a 5% per day penalty up to a total of 3 days (i.e., up to 4 days after original due date). No assignments will be accepted 4 days beyond their due date; assignments more than 4 days late will receive a grade of 0. Note that submitting assignments late may delay the teaching team's ability to provide feedback on your work.

Example: The deadline for Assignment 1 is May 29th 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 May 30th at 11:59pm. Assignments submitted June 1st, 2nd, or 3rd will receive a 5% per day late penalty (e.g., 5%, 10%, 15% penalty, respectively). If a student has not submitted Assignment 1 by June 3rd at 11:59pm they will receive a grade of 0.

This policy holds for all both assignments in this course 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: [Summer 2022 Important Dates](#)

Event	S1
Last date to add a course without permission of instructor	May 13 th
Last date to add a course with permission of instructor	May 20 th
Last date to drop course without receiving a grade	June 6 th
Course Withdrawal Period (withdraw from course and receive a "W" on transcript – see Add and Drop Deadline Information below)	June 7 th – 20 th

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 requires students to have access to a laptop during in-person sessions in order to work on practice problems using statistical software. Students will also need access to a computer and Internet connection to watch pre-recorded content lectures through eClass in advance of twice-weekly in-person sessions and to complete online course quizzes. It is expected that you would complete quizzes in a manner that does not include consulting an unauthorised source during the quiz

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 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 if not impossible for the professor to intervene if an unsafe situation arises. If such an event occurs, students are advised to shut down the group and form a new one. 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 PSYC2021B.
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 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.).

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 PSYC2021B 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](#).

Proposed Course Schedule (subject to change)

Class	Live Mtg Date	Topic	What's due when?
1	May 10	Course Overview Introduction to jamovi	
2	May 12	Introduction to Statistics	Course Outline Survey (May 12th @ 11:59pm)
3	May 17	Examining Data: Tables & Figures	
4	May 19	Measures of Central Tendency & Variability	Apply It 1 (May 20 – 22)
5	May 24	z-scores & the Normal Distribution	
6	May 26	Quiz 1 (online; no class)	
		ASSIGNMENT 1	MAY 29 @ 11:59PM (+1 day grace period)
7	May 31	Probability & Intro to Hypothesis Testing	
8	June 2	Errors in Hypothesis Testing, Statistical Power, & Effect Size	Apply It 2 (June 3 – 5)
9	June 7	One-sample t-test	
10	June 9	Chi-square Statistic: Tests for Goodness of Fit & Independence	Apply It 3 (June 10 – 12)
11	June 14	Correlation	
12	June 16	Quiz 2 (online; no class)	
		ASSIGNMENT 2	JUNE 19 @ 11:59PM (+1 day grace period)