Faculty of Health
Department of Psychology
PSYC 2021 B: STATISTICAL METHODS I
Tuesdays & Thursdays at 2:30pm
Stedman Lecture Hall D

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 provided from instructor and teaching assistant during in-person class time. **Students are expected to have watched the pre-recorded lecture(s) for each scheduled topic before attending each in-person class (see Course Schedule on last page).**

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. The term goes by very quickly and it is important to stay on top of course content class to class. 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 classes, and completing assigned review exercises and activities outside of class. Completing assignments and studying for tests may require additional time around their respective deadlines.

Instructor and T.A. Information

Instructor: Dr. Jodi Martin (she/her)
Office Hours: After class or by appointment (use schedule link in Contact Us section on eClass)
Email: jodimart@yorku.ca

T.A.	**Linda Farmus**
Email	lifarm@yorku.ca
Office Hours	By appointment (email to set up appointment)

***Note:** All "by appointment" office hours will be held as Zoom meetings, but you are welcome to talk with us in person at end of in person classes; there will always be time set aside for this*

When sending emails to the teaching team please include "PSYC2021B" in the subject line and your full name somewhere in the email. Emails to the teaching team will be answered Monday to Friday; please expect a minimum of 1-2 business days for us to respond, though we will do our best to respond sooner when possible.

Course Prerequisite(s): Course prerequisites are strictly enforced

- HH/PSYC 1010 6.00 (Introduction to Psychology)

Course Credit Exclusions

Please refer to York Courses Website for a listing of any course credit exclusions.

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 applied meaning from 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. Identify the different scales of measurement from example variable descriptions and research scenarios
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)

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, review & practice problems, assignment instructions and submissions, and appointment sign-ups for instructor & TA office hours. Important communications from instructor to students will take place through eClass's Course Announcements, so make sure you're reading them!

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.

Required Software & Text

Students are **required** to download the "solid" version of jamovi Desktop (version 2.3.21) 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.

> **Note:** If you run into problems downloading jamovi Desktop on your computer, you can use jamovi Cloud directly from your web browser. This should be used as a last resort as it is still in beta testing and output or functionality may differ from what is demonstrated through pre-recorded lectures and in class.

Students are also **required** to download the iClicker Student app (available through the iOS or Google Play Store, or at app.reef-education.com for non-mobile users) to participate during our in person classes. More information on how to enrol in this course through iClicker Student is available in the "iClicker Participation" folder on eClass, or you can use the following link to register https://join.iclicker.com/ZRLO

Students should expect to bring a laptop to 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 lecutres, live community meetings, and through eClass.

Optional Textbooks to Support your Learning

You can consider the following FREE open access texts available to download online to supplement your learning in the course. **If you use one of these books, keep in mind that all tests, 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 statistical methods.

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
Test 1	May 25th	25%
Test 2	TBD between June 28th – 30th	25%
Assignment 1	June 2nd @ 11:59pm	20%
Assignment 2	June 25th @ 11:59pm	20%
Participation (iClicker)	Each class	10%
Total		**100%**

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

Tests

Students will complete two (2) in person tests throughout the course. The first test will take place during scheduled class time (see Course Schedule on last page), the second test will be during the S1 semester final exam period; the exact date of Test 2 will be shared once it has been scheduled by the registrar's office. Each test will be non-cumulative based on content from preceding classes and will focus on students' conceptual and interpretive knowledge of statistics. More information about each test will be provided in class before the test. Students should be prepared to bring photo ID (a YorkU student card) to each test.

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.

Participation

Students can earn participation points by responding to iClicker questions during in person classes, up to a possible total of 10% of your final grade. All students will get 2 "freebies" so that up to two class' worth of iClicker can be missed with no penalty. These freebies should be used any time you have to miss an in person class due to illness, work or home life responsibilities, etc. More information about using iClicker for this course will be available in the "iClicker Participation" folder on eClass.

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 classes held each week on Tuesday and Thursday at 2:30pm. In-person sessions will be spent on Q&A, iClicker questions, 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) for each class before the in-person class on that topic (see Course Schedule on the last page for more detail).**

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 2022-23

Missed Tests and Late Assignments

Missed Tests

For any missed test students MUST complete the Missed Test form found in the Communication & Contact Info folder on eClass. Failure to complete the form within 48 hours of the original test dates will result in a grade of 0 for the missed test. 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 test a TA will contact you to schedule a make up test. If you miss your scheduled make up test, you must again complete the Missed Test form with an acceptable reason and the weighting of that test will be redistributed to the remaining test. Students must complete at least one of the two tests in this course.

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 deadline). 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 June 2nd 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 June 2nd at 11:59pm. Assignments submitted June 3rd, 4th, or 5th will receive a 5% per day late

penalty (e.g., 5%, 10%, 15% penalty, respectively). If a student has not submitted Assignment 1 by May 26th at 11:59pm they will receive a grade of 0.

This policy holds for all both assignments in this course and their respective deadlines.

Add/Drop Deadlines

For a list of all important dates please refer to: Summer 2023 Important Dates

	SU Term	S1 Term	S2 Term
Last date to add a course **without permission** of instructor (also see Financial Deadlines)	May 22	May 12	July 10
Last date to add a course **with permission** of instructor (also see Financial Deadlines)	June 5	May 19	July 17
Drop deadline: Last date to drop a course without receiving a grade (also see Financial Deadlines)	July 7	June 5	July 24
Course Withdrawal Period (withdraw from a course and receive a grade of "W" on transcript – see note below)	July 17 – Aug. 15	June 13 – June 26	July 31- – Aug. 15

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 classes.

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 Test

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.

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 assessments 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.

Any sharing of screenshots and/or emailed personal feedback received from completing course assessments will be considered a violation of course policies 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, third party sites, etc.) is strictly prohibited**.**

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 9	Course Overview	
2	May 11	Introduction to Statistics Introduction to jamovi	**BONUS: Course Outline Survey (May 14th @ 11:59pm)**
3	May 16	Examining Data: Tables & Figures	
4	May 18	Measures of Central Tendency & Variability	
5	May 23	z-scores & the Normal Distribution	
6	May 25	**Test 1**	
NO CLASSES – BREAK FOR 2023 CONGRESS OF THE HUMANITIES & SOCIAL SCIENCES			
7	June 6	Probability & Intro to Hypothesis Testing	**Assignment 1 Due June 2nd @ 11:59pm (+ 1 day grace period)**
8	June 8	Errors in Hypothesis Testing, Statistical Power, & Effect Size	
9	June 13	One-sample t-test	
10	June 15	Correlation	
11	June 20	Chi-square Statistic: Tests for Goodness of Fit & Independence	
12	June 22	Course wrap up	**Assignment 2 Due June 23rd @ 11:59pm (+ 1 day grace period)**
	TBD June 28 – 30	**Test 2**	