

**Faculty of Health  
Department of Psychology  
PSYC 2021 3.0 O: Statistical Methods I  
Winter 2023 | Tuesdays at 8:30-11:30am  
Vanier College (VC) 135**

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**Important information about course delivery**

Students are responsible for attending weekly in-person classes in which content will be delivered and applied through iClicker questions, and completion of practical problems; support and feedback will be provided from the instructor and teaching assistants during in-person class time.

**\*\*Note Students who fail the YU Screen or are otherwise feeling unwell should not attend in-person classes until their symptoms end.** Each lecture will be recorded and posted to eClass each week, for students who have missed lectures due to failing the YU Screen (e.g., COVID or known COVID exposure) or are otherwise feeling unwell. Class and class participation can be made up by watching the recorded lectures (audio-visual).

**Instructor and T.A. Information**

**Instructor:** Benjamin Diplock, M.A., H.B.Sc.

**Email:** [bdiplock@yorku.ca](mailto:bdiplock@yorku.ca)

- When sending an email please include PSYC2021O in the subject box as well as your full name and your student number in the signature of the message)

**Office Hours (Zoom):** By appointment only.

- If you would like to schedule an appointment, please email requesting a virtual appointment (when sending an email to request an office hour, please include PSYC2021O Virtual Appointment in the subject box and your full name and student number in the signature of the message).

<b>T.A.</b>	<b>Tamara Tavares</b>	<b>Tony Miller</b>
<b>Email</b>	<a href="mailto:ttavare@yorku.ca">ttavare@yorku.ca</a>	<a href="mailto:tony2017@yorku.ca">tony2017@yorku.ca</a>
<b>Office Hours</b>	By request (email to schedule)	By request (email to schedule)

**\*\*Please note that it may take the instructor and TAs up to 2 business days to respond to your emails.** If you send us an email over the weekend please do not expect a response until the work week (Monday – Friday) unless otherwise stated by a member of the teaching team or it is an urgent matter.

**Course Prerequisite or corequisite(s)**

- 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 slides, online quizzes, review & practice problems, Apply Its, as well as Assignment instructions and submissions. All communications from instructor to students will take place through eClass's Course Announcements. **Note: Please do not send the teaching team messages through the chat on eClass.**

**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 student's responsibility to review and become comfortable with using eClass for the purposes of this course.

## Course Description

Basic statistical literacy is an important life skill acquired through undergraduate education. This class will introduce you to statistics for psychological studies. It will review fundamental concepts and the application of descriptive and inferential statistics. Students will obtain both conceptual and applied knowledge in a range of topics (e.g., data visualization; central tendency and variability; probability and sampling distributions; hypothesis testing; effect sizes; parametric and non-parametric statistical methods). Students will gain hands-on experience working with real data by using software (i.e., jamovi) to analyse and interpret findings.

## 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)
- $\chi^2$  Goodness of Fit
- $\chi^2$  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. Identify the different scales of measurement and limitations of descriptive statistics
2. Demonstrate the ability to summarize, organize, and present the essential features of data numerically and graphically
3. Understand the role of probability in inferential statistics
4. Analyse and interpret findings from various statistical tests using statistical software (i.e., jamovi)
5. Explain the process underlying hypothesis testing and how researchers use this process to answer research questions
6. Generate research questions and statistical hypotheses (i.e., null and alternative) for different research scenarios

### **Required Software & Text**

- Students are **required** to download the “solid” version of jamovi (version 2.3.21) from [www.jamovi.org](http://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 Student (available through the iOS or Google Play Store, or at [app.reef-education.com](http://app.reef-education.com) for non-mobile users) to participate live during weekly in-person classes. More information on how to enroll in this course through iClicker Student is available in the “iClicker Participation” folder on eClass.

**Students should expect to bring a laptop to the 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 live in-person classes 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, not the 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	Weighting
Course Outline Quiz	January 22	1%
Apply It 1	February 3 – 5 (3-day submission window)	5%
Quiz 1	February 14	15%
Assignment 1	February 27 (+1 day grace period)	25%
Apply It 2	March 10 – 12 (3-day submission window)	5%
Apply It 3	March 24 – 26 (3-day submission window)	5%
Quiz 2	April 4	15%
Assignment 2	April 17 (+1 day grace period)	25%
iClicker	During classes (+ 5 day grace period) throughout term	4%
<b>Total</b>		<b>100%</b>

**Description of Assignments**

**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.

**Quizzes:** Students will complete two (2) formal 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 randomly selected from a large question bank so no two students will complete an identical quiz. Quizzes will be available through eClass between 8:30am and 11am (Toronto time; Eastern Standard Time [EST]) on their scheduled dates. Once started, students will have 40 minutes (i.e., not the full 2.5 hours) to complete the quiz. All quizzes will auto-submit at 11am; 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.

**Assignments:** The purpose of an assignment is to further evaluate your conceptual understanding of the material covered in class, to demonstrate that you can perform the types of analysis covered in this course and that you can interpret/report the results. Assignments will be completed outside the normal class time and students are expected to complete their assignments individually. More information will be provided in the “Assignments” folder in eClass and you will receive each assignment in advance of the due date.

**Participation:** You will have the opportunity to gain 5% for participating in completing the feedback quiz related to course information (i.e., course outline) and responding to iClicker questions during our weekly class meeting. Please note the Course Outline Quiz is mandatory and accounts for 1% of the overall 5% for participation. See “iClicker Participation” folder on eClass for more information on how to download and install iClicker.

### **Class Format and Attendance Policy**

Each week – except for the week of March 14 (virtual delivery) or unless there is a (virtual) quiz scheduled on that day (see schedule on page 11) – we will meet at 8:30am in-person, I will deliver course teachings, we will engage in iClicker activities and complete practice problems. If time permits following lectures, students may choose to stay around and ask questions of the instructor and/or the TA’s. Students are strongly encouraged to attend the class sessions as the material covered in the course in a given week builds on the previous week’s material and enhances your overall learning experience. These sessions will also help you to stay on track with the course material.

### **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 Quizzes, Late Apply Its, Late Assignments, and Missed Participation**

**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 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 makeup quiz (which will also be held online). If you miss your scheduled makeup quiz, you must again complete 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.

Example: Apply It 1 can be submitted from February 3<sup>rd</sup> at 12:01am until February 5<sup>th</sup> at 11:59pm. If a student has not submitted Apply It 1 by February 5<sup>th</sup> at 11:59pm they will receive a grade of 0.

**This policy holds for all three (3) Apply Its 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 it.

**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 the 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 February 27<sup>th</sup> 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 February 28<sup>th</sup> at 11:59pm. Assignments submitted on March 1<sup>st</sup>, 2<sup>nd</sup> or 3<sup>rd</sup> will receive a 5% per day late penalty (e.g., 5%, 10%, 15% penalty, respectively). If a student has not submitted Assignment 1 by March 3<sup>rd</sup> at 11:59pm they will receive a grade of 0.

**This policy holds for 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 it.

**Missed (iClicker) Participation:** For students who have missed a lecture due to failing the YU Screen (e.g., COVID or known COVID exposure) or are otherwise feeling unwell, class participation can be made up by watching the recorded lectures (audio-visual) within the specified timeframe. Recorded lectures will be posted before 11:59pm on the day of that class. If you were unable to attend class and this recorded lecture is not watched within the 5-day grace period, you will receive a grade of 0 for participation for this class.

Example: If a student is unable to attend the Tuesday, February 28 class, they can still receive the grade by watching the recorded lectures (audio-visual) by March 5 at 11:59pm (5-day grace period). If a student has not watched the recorded lecture by Sunday, March 5 at 11:59pm they will receive a grade of 0.

**This policy holds for all missed classes 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: [Fall/Winter 2022-23 Important Dates](#)

	Fall (Term F)	Year (Term Y)	Winter (Term W)
Last date to add a course <b>without permission</b> of instructor (also see Financial Deadlines)	Sept. 20	Sept. 20	Jan. 22
Last date to add a course <b>with permission</b> of instructor (also see Financial Deadlines)	Oct. 4	Oct. 25	Feb. 6
Drop deadline: Last date to drop a course without receiving a grade (also see Financial Deadlines)	Nov. 11	Feb. 10	Mar. 17
Course Withdrawal Period (withdraw from a course and receive a grade of “W” on transcript – see note below)	Nov. 12 – Dec. 7	Feb. 11 – April 11	March 18 – April 11

**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.

### **Information on Plagiarism Detection**

Turnitin will be used to detect any evidence of plagiarism.

### **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 access eClass for content, quizzes and recorded lectures. It is expected that you would complete quizzes in a manner that does not include consulting an unauthorized 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.

## **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 (e.g, don't post the link publicly on Reddit) and share only with other members of PSYC 2021B.
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 PSYC 2021 3.0 O 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

Week	Date (Delivery)	Topic	What's due (and when)?
1	Jan 10 (In-person)	Course Overview	
2	Jan 17 (In-person)	Introduction to Statistics	<b><u>Course Outline Quiz</u></b> <b>(Jan 22)</b>
3	Jan 24 (In-person)	Examining Data: Tables and Figures Introduction to jamovi	
4	Jan 31 (In-person)	Measures of Central Tendency & Variability	<b><u>Apply It #1</u></b> (Feb 3 – 5)
5	Feb 7 (In-person)	z-Scores: Location of Scores and Standardized Distributions	
6	Feb 14 <b>(Virtual)</b>	<b><u>Quiz #1: Online submission</u></b> No class	<b><u>Quiz #1</u></b> (Feb 14)
	<b>Feb 18 – 24</b> <b>Winter Reading Week</b>	<b><u>Assignment #1: Online Submission</u></b> No Class	<b><u>Assignment #1</u></b> (Feb 27; +1 day grace period)
7	Feb 28 (In-person)	Probability and Introduction to Hypothesis Testing	
8	Mar 7 (In-person)	Errors in Hypothesis Testing, Statistical Power, and Effect Size	<b><u>Apply It #2</u></b> <b>(Mar 10 – 12)</b>
9	Mar 14 <b>(Virtual)</b>	Testing One Sample Mean Estimating the Mean of a Population	
	Mar 17	<b>Drop deadline: Last date to drop a course without receiving a grade (also see Financial Deadlines)</b>	
10	Mar 21 (In-person)	Chi-square Statistic: Tests for Goodness of Fit and Independence	<b><u>Apply It #3</u></b> <b>(Mar 24 – 26)</b>
11	Mar 28 (In-person)	Correlation	

Week	Date (Delivery)	Topic	What's due (and when)?
12	Apr 4 <b>(Virtual)</b>	<b><u>Quiz #2: Online Submission</u></b> No Class	<b><u>Quiz #2 (Apr 4)</u></b>
	<b>Apr 12 – 27</b> <b>Winter</b> <b>Examinations</b>	<b><u>Assignment #2: Online Submission</u></b> No Class	<b><u>Assignment #2 (Apr 17;</u></b> <b>+1 day grace period)</b>