

**Faculty of Health
Department of Psychology
PSYC 2020 6.0 H: STATISTICAL METHODS I AND II
Wednesday/2:30-5:30/ ACE 002
Fall-Winter/2023-2024**

We will meet in person every Wednesday at 2:30pm. Each class will involve a lecture followed by demonstrations/activities to aid in your understanding of the concepts covered in the lecture. Lecture attendance is strongly encouraged as material will expand upon the slides provided and demonstrations will be valuable to understanding course material and statistical software.

Instructor and T.A. Information

Instructor: Rachel Rabi, PhD

Office Hours: By appointment only (Office: BSB 220)

Email: rrabi2@yorku.ca (when sending an email please include PSYC 2020H in the subject line and your full name and student number in the signature of the message).

T.A.	Sarah Bjornson
Email	bjornson@yorku.ca
Office Hours	By appointment

Please note that it may take the instructor and TAs up to 3 business days to respond to your emails. If you send us an email over the weekend please do not expect a response until the normal work week (Monday – Friday) unless otherwise stated by a member of the teaching team or it is an urgent matter.

Course Prerequisite(s): Course prerequisites or co-requisite 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 website: [eClass](#)

All course materials will be available on the course eClass site, unless otherwise indicated by the instructor. The site will be your central access point for course materials. **Note: Please do not send the teaching team messages through the chat on eClass.**

Course Description

This course provides an introduction to the analyses of data from psychological studies. Fundamental concepts and techniques of both descriptive and inferential statistics and their application to psychological research are discussed.

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.

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
- Independent samples t-test
- Dependent samples t-test
- Review of basic statistical concepts
- One-way Independent Groups ANOVA (with contrasts)
- Two-way Independent Groups ANOVA (with interaction and contrasts)
- One-way Repeated Measures ANOVA (with contrasts)
- Correlation (including partial correlation)
- Simple Regression
- Multiple Regression (optional)
- **Effect size is included as part of all inferential statistics covered in this course.*

Specific Learning Objectives

1. Choose descriptive statistics that are appropriate for summarizing and organizing variables with different scales of measurement
2. Demonstrate the ability to summarize, organize, and present the essential features of data numerically and graphically
3. Identify the differences between descriptive and inferential statistics (e.g., summarize sample data vs use sample data to make inferences about the population)
4. Identify limitations of descriptive statistics (e.g., cannot be used to test hypotheses about the population under study)
5. Demonstrate the ability to generate statistical hypotheses (i.e., null and alternative) that are applicable to various research situations
6. Demonstrate the ability to compute univariate inferential statistics and interpret and present the results for various research situations (i.e., t tests, ANOVAs)
7. Identify limits of conclusions based on inferential statistics (e.g., statistical vs practical significance)
8. Use statistical software to conduct descriptive and inferential statistics
9. Interpret and present results in APA

Required Software

Students are **required** to download the “solid” version of jamovi (version 2.3.28) 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.

Required Text

- Gravetter, F. J., & Wallnau, L. B. (2017). *Statistics for the Behavioral Sciences* (10th ed.). Boston, MA: Cengage Learning.
- MindTap is not required for this course (however students may find this resource helpful to review weekly statistical concepts)

Optional Text/Resources

If you use one of these books/resources, keep in mind that all Tests and Assignments will be evaluated based on the content delivered through lectures, not content of the texts (they are just there for additional optional support).

- Howell, D. C. (2016). *Fundamental Statistics for the Behavioral Sciences* (9th ed.). Wadsworth Publishing, Cengage Learning.
- <https://open.umn.edu/opentextbooks/textbooks/an-introduction-to-psychological-statistics> [FREE]

- Navarro, D. J., & Foxcroft, D. R. (2022). Learning Statistics with jamovi: A Tutorial for Psychology Students and Other Beginners. [FREE]
<https://www.learnstatswithjamovi.com/>

Course Requirements and Assessment:

Assessment	Date of Evaluation (if known)	Weighting
Test 1 [FALL]	October 18, 2023	15%
Test 2 [FALL]	November 29, 2023	15%
Test 3 [WINTER]	February 28, 2023	15%
Test 4 [WINTER]	April 3, 2023	15%
Assignment 1 [FALL]	September 20, 2023	5%
Assignment 2 [FALL]	October 4, 2023	5%
Assignment 3 [FALL]	November 8, 2023	5%
Assignment 4 [FALL]	November 22, 2023	5%
Assignment 5 [WINTER]	January 24, 2024	5%
Assignment 6 [WINTER]	February 7, 2024	5%
Assignment 7 [WINTER]	March 13, 2024	5%
Assignment 8 [WINTER]	March 27, 2024	5%
Total		100%

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

Tests

Students will complete **four tests** in this course (2 tests per semester). The tests will be **non-cumulative** and will cover material from lectures, readings, and class/assignment activities. The format of the tests may be a mix of multiple-choice and open-ended/short-answer questions. All four tests will take place in the course classroom (ACE 002). More information about the content, format, and length of the test will be provided prior to its administration.

Assignments

Students will complete eight assignments (4 assignments per semester) in this course. The purpose of the assignments are to evaluate your conceptual understanding of the material covered in class, to demonstrate that you can perform the types of analyses 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.

Class Format and Attendance Policy

Students are strongly encouraged to attend the class sessions as the material covered in the course in a given week build 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 2023-24](#)

Missed Tests/Late Assignment

Missed Test: For any missed test, students MUST complete the following online form which will be received and reviewed in the Psychology undergraduate office. Please include Dr. Rabi's email (rrabi2@yorku.ca) when filling out this form. At this time, due to COVID-19, an Attending Physician's Statement (APS) is not required, **however, a reason for missing an evaluated component in the course must be provided.**

[HH PSYC: Missed Tests/Exams Form](#). Failure to complete the form within 48 hours of the original deadline will result in a grade of zero for the missed test. Once you have notified us about your missed test, a member of the teaching team will be in contact with you to schedule a make-up. **There is only one opportunity to write a make-up test. Please note that assignments cannot be used as a substitute for a missed test.**

Late Assignments: Similar to your quizzes you must have a valid reason for missing the scheduled due date for your assignment. It is up to the course instructor to determine how much additional time, if any, will be allowed to complete and submit the assignment. **Please note that a test cannot be used as a substitute for an assignment.**

Add/Drop Deadlines

For a list of all important dates please refer to [Undergraduate Fall/Winter 2023-2024 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)	September 20	September 20	January 22
Last date to add a course with permission of instructor (also see Financial Deadlines)	September 28	September 28	January 31
Drop deadline: Last date to drop a course without receiving a grade (also see Financial Deadlines)	November 8	February 8	March 11
Course Withdrawal Period (withdraw from a course and receive a grade of "W" on transcript – see note below)	November 9 – December 5	February 9- April 8	March 12- April 8

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

Electronic devices (e.g., tablets, laptops) are permitted during class time for course-related purposes. Electronic mobile devices of any kind are not allowed during a test. Students are required to turn off and secure any electronic mobile device in their bag which is to be placed under the chair while a test/exam is in progress. Any student observed with an electronic device during a test/exam may be reported to the Undergraduate Office for a potential breach of Academic Honesty. A **non-programmable calculator** is permitted during tests.

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.

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](#).

Calumet and Stong Colleges' Student Success Programming

[Calumet](#) and [Stong](#) Colleges aim to support the success of Faculty of Health students through a variety of **free programs** throughout their university career:

- [Orientation](#) helps new students transition into university, discover campus resources, and establish social and academic networks.
- [Peer Mentoring](#) connects well-trained upper-year students with first year and transfer students to help them transition into university.
- [Course Representative Program](#) supports the academic success and resourcefulness of students in core program courses through in-class announcements.
- [Peer-Assisted Study Sessions \(PASS\)](#) involve upper-level academically successful and well-trained students who facilitate study sessions in courses that are historically challenging.
- [Peer Tutoring](#) offers one-on-one academic support by well-trained Peer Tutors.
- Please connect with your Course Director about any specific academic resources for this class.
- Calumet and Stong Colleges also support students' [Health & Wellness](#), [leadership and professional skills development](#), [student/community engagement and wellbeing](#), [Career](#)

[Exploration](#), [Indigenous Circle](#), [awards and recognition](#), and [provide opportunities to students to work or volunteer](#).

- For additional resources/information about Calumet and Stong Colleges' Student Success Programs, please consult our websites ([Calumet College](#); [Stong College](#)), email scchelp@yorku.ca, and/or follow us on Instagram ([Calumet College](#); [Stong College](#)), Facebook ([Calumet College](#); [Stong College](#)) and [LinkedIn](#).

Are you receiving our weekly email (Subject: "Calumet and Stong Colleges - Upcoming events")? If not, please check your Inbox and Junk folders, and if it's not there then please contact ccscadm@yorku.ca, and request to be added to the listserv. Also, make sure to add your 'preferred email' to your [Passport York personal profile](#) to make sure you receive important news and information.

Course Materials Copyright Information

These course materials are designed for use as part of the **PSYC 2020H** 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 (Subject to Change)

FALL SEMESTER				
Class	Date	Topic	Chapter Readings	Reminder
1	Sep 06	Course Overview eClass Orientation	Syllabus	Install jamovi on your computer
2	Sep 13	Introduction to Statistics	1 & Appendix A	Assignment 1 posted
3	Sep 20	Examining Data: Tables & Figures	2 (exclude sect. 2.4 & 2.5)	Assignment 1 due
4	Sep 27	Measures of Central Tendency & Variability	3 & 4	Assignment 2 posted
5	Oct 04	Test 1 Review		Assignment 2 due by 11:59pm
	Oct 11	NO CLASS: FALL READING WEEK		
6	Oct 18	TEST 1 (15%): Class 2, 3, 4; Chapters 1, 2, 3, 4		
7	Oct 25	z-scores	5	
8	Nov 01	Probability Probability and Samples: Distribution of Sample Means	6 (exclude sect. 6.4), 7	Assignment 3 posted
9	Nov 08	Introduction to Hypothesis Testing	8	Assignment 3 due by 11:59pm
10	Nov 15	One-sample t-test	9	Assignment 4 posted
11	Nov 22	Test 2 Review		Assignment 4 due by 11:59pm
12	Nov 29	TEST 2 (15%): Class 7, 8, 9, 10; Chapters 5, 6, 7, 8, 9		

WINTER SEMESTER

Class	Date	Topic	Chapter Readings	Reminder
1	Jan 10	Independent Samples t-Test	10	
2	Jan 17	Dependent Samples t-Test	11	Assignment 5 posted
3	Jan 24	One-Way ANOVA	12	Assignment 5 due by 11:59pm
4	Jan 31	Repeated-Measures ANOVA	13	Assignment 6 posted
5	Feb 07	Two-Factor ANOVA	14	Assignment 6 due by 11:59pm
6	Feb 14	Test 3 Review	--	
	Feb 21	NO CLASS: WINTER READING WEEK		
7	Feb 28	TEST 3 (15%): Class 1, 2, 3, 4, 5; Chapters 10, 11, 12, 13, 14		
8	Mar 06	Correlation	15	Assignment 7 posted
9	Mar 13	Regression	16	Assignment 7 due by 11:59pm
10	Mar 20	Chi-Square Tests	17	Assignment 8 posted
11	Mar 27	Test 4 Review	--	Assignment 8 due by 11:59pm
12	Apr 03	TEST 4 (15%): Class 8, 9, 10; Chapters 15, 16, 17		