

**Faculty of Health**  
**Department of Psychology**  
**PSYC 2020 6.0 G: STATISTICAL METHODS I AND II**  
**Thursdays 2:30 – 5:30, Accolade East 002**  
**FW 2019-2020**

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**Instructor and T.A. Information**

Instructor: Dr. Jodi Martin

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Office: 280 Behavioural Sciences Building (BSB)

Office Hours: In person: Thursdays 10am to 12pm; Online: Tuesdays 1pm to 2pm (all of Dr. Martin's office hours are held as drop-in, first come first served. Links to weekly online office hours can be found on the course Moodle)

<b>T.A.</b>	<b>Stephanie Bell</b>
Email	<a href="mailto:bells@yorku.ca">bells@yorku.ca</a>
Office	TBD
Office Hours	TBD

**Note: To attend office hours with your assigned TA, please sign up for a time slot in Moodle. Time slots must be booked with minimum of 1 hour notice to the TA.**

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

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

**Course Credit Exclusions**

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

**Course website:** [Moodle](#)

**Course Description**

An introduction to the analysis of data from psychological studies. Fundamental concepts and techniques of both descriptive and inferential statistics and their application to psychological research.

**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)
- $\chi^2$  Goodness of Fit
- $\chi^2$  Test of Independence
- One-sample t test
- Two independent samples t-test
- Paired 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
- *\*Effect size is included as part of all inferential statistics covered in this course.*

## Specific Learning Objectives

1. Identify different scales of measurement
2. Demonstrate the ability to calculate descriptive statistics such as measures of central tendency and variability using the appropriate formulas
3. Choose descriptive statistics that are appropriate for summarizing and organizing variables with different scales of measurement
4. Demonstrate the ability to summarize, organize, and present the essential features of data numerically and graphically
5. Identify the differences between descriptive and inferential statistics (e.g., summarize sample data vs. use sample data to make inferences about the population)
6. Identify limitations of descriptive statistics (e.g., cannot be used alone to test hypotheses about the population under study)

7. Demonstrate the ability to generate statistical hypotheses (i.e., null and alternative) that are applicable to various research situations
8. Demonstrate the ability to compute univariate inferential statistics and interpret and present the results for various research situations (i.e., t tests, ANOVAs)
9. Identify limits of conclusions made based on inferential statistics (e.g., statistical vs practical significance), and how effect size and confidence intervals can be provide additional information
10. Understand the need to think critically when reading results of statistical analyses in published psychology research

### Required Text

Gravetter, F. J., & Wallnau, L. G. (2017). *Statistics for the Behavioural Sciences* (10th ed.). Belmont, CA: Wadsworth, Cengage Learning.

**PLUS**

Chapter 20 Supplemental

**PLUS**

MindTap access code

- Hard cover, loose leaf and e-book packages including the text, supplemental chapter and MindTap access codes are available at the York Bookstore

You will need access to MindTap, an online companion resource. You can purchase the textbook plus MindTap access from the bookstore. If you do not prefer to have a hard copy you can purchase MindTap on its own as there is an e-book included, however with this option you will not have access to the e-book once your MindTap access expires. To register for MindTap, please follow the steps outlined in “How to access your MindTap course” which is posted in the Course Announcements on Moodle.

Note: MindTap is required for this course in order for you to complete the weekly assignments.

### Course Requirements and Assessment:

Assessment	Date of Evaluation (if known)	Weighting
MindTap Problem Sets	Weekly (suggested)	15%
Test #1	September 26	17%
Test #2	October 31	17%
Test #3	November 28	17%
Test #4	February 13	17%
Test #5	April 2	17%
Total		100%

### Description of Assignments

**MindTap Problem Sets:** These are weekly quizzes completed online through MindTap, which will focus on course material covered that week. You will have three attempts to complete each question on the weekly quizzes, and your highest mark across these three

attempts will be recorded. This gives you a unique, risk-free opportunity to learn from your initial mistakes on any given question.

The suggested weekly format is pivotal in ensuring that you stay up-to-date on the course materials and the formative skills that you will be learning throughout the course. **Although I strongly suggest that you complete the weekly problem sets at a regular weekly cadence as each chapter is covered in class throughout the semester, all problem sets from Semester One (Fall) have a final deadline of December 5<sup>th</sup> at 11:59pm and all problem sets from Semester Two (Winter) have a final deadline of April 9<sup>th</sup> at 11:59pm. These deadlines are non-negotiable.** It is strongly advised that you do not wait until the final few weeks of the semester to complete the problem sets.

**Tests:** All tests are non-cumulative and will cover the material from lectures, readings, and MindTap problem sets from the section of the course directly preceding the test. The format of the tests will be a mix of multiple-choice and short answer/analysis questions.

**Note:** When necessary, students will be provided with a formula sheet during tests. No additional aids (other than a non-programmable calculator) are permitted during tests.

### **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 2019-20](#)

### **Missed Test Policy:**

**Tests:** **For any missed tests, students MUST complete the following online form within 48 hours of the original deadline**, which will be received and reviewed in the Psychology undergraduate office: [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 tests.

Please indicate the name of the professor AND the TA to whom you are assigned when completing this form. Your supporting documentation (see details below) can be uploaded using this form. If you cannot provide notification and documented support for missing the test or final exam within this 48-hour period, additional documentation accounting for the delay must be provided to avoid receiving a grade of zero.

**In addition, to the online form, students MUST have a documented reason for a missed tests, midterm exam or late assignments such as illness, compassionate grounds, etc., and MUST submit official documentation (e.g. [Attending Physician Statement](#))**

Students with a **documented, eligible reason** for missing a course test or the final exam (such as illness, compassionate grounds, etc.), which is **confirmed by supporting documentation** may request accommodation from the professor. Acceptable supporting documentation may include: Attending Physician Statement (doctor's note; which can be found at: <http://registrar.yorku.ca/pdf/attending-physicians-statement.pdf>), death certificate, obituary notice, automobile accident report, airline/bus ticket/receipt for emergency travel (note that documentation for emergency travel must indicate destination, departure, and return dates and is subject to approval by the Course Instructor). **Having to travel for non-emergent reasons (i.e., going on vacation) or having to work at the time of a test are not considered valid excuses for missing a test or exam.**

A physician's statement/doctor's note **must** include the following information:

- (i) full name, mailing address, telephone number of the physician,
- (ii) the nature of the illness and its duration (i.e., specific dates covered), and
- (iii) an indication of whether the illness and/or medication prescribed would have SERIOUSLY affected the student's ability to study and perform over the period in question.

**NOTE:** The physician's office may be contacted to verify that the forms were completed by the physician.

**For any missed test, one make-up date will be set.** Students will only be permitted to write a make-up with appropriate documentation after following the correct procedures outlined above (see paragraph above). **Students who do not complete the make up test/exam must provide additional documentation justifying why they cannot write the make up on the specified date, and will have to meet with the Professor to determine how the assessment graded weighting will be redistributed.**

Important Note: You should be aware that if you miss the make-up test or exam as scheduled, you may not have the requisite 15% feedback on your course work to determine whether or not you need to drop the course, and you will not be provided an additional opportunity to make-up the test or exam; make-ups may not take the same format as the original test or exam (e.g., you may be asked to write an essay for the make-up). Therefore, it is in your best interest to write the tests as scheduled by the Course Instructor except in truly dire, exceptional circumstances.

### Add/Drop Deadlines

For a list of all important dates please refer to: [Fall/Winter 2019-20 - Important Dates](#)

	FALL (F)	YEAR (Y)	WINTER (W)
Last date to add a course <b>without permission</b> of instructor (also see Financial Deadlines)	Sept. 17	Sept. 17	Jan. 19

Last date to add a course <b>with permission</b> of instructor (also see Financial Deadlines)	Oct. 1	Oct. 22	Feb. 3
Drop deadline: Last date to drop a course without receiving a grade (also see Financial Deadlines)	Nov. 8	Feb. 3	March 13
Course Withdrawal Period (withdraw from a course and receive a grade of "W" on transcript – see note below)	Nov. 9 - Dec. 3	Feb. 4 - Apr. 5	March 14 - Apr. 5

***\*Note:** 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 mobile devices of any kind are not allowed during a test or examination.**

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 will be reported to the Undergraduate Office for a potential breach of Academic Honesty.**

**Videorecordings of lectures are strictly prohibited.** Should you wish to audiorecord a lecture, please obtain permission directly from the Professor prior to making any recordings.

### **Attendance Policy**

Attendance is highly recommended for success in this course. Although lecture content will overlap with the textbook content, lectures will include examples and applications of these materials that are not covered in-depth in the textbook, and important information regarding the course, its quizzes and tests will be provided in class. Students are thus expected to attend each class, barring illness or extenuating circumstance. When lectures are missed, students are responsible for making arrangements to obtain notes and information regarding the missed lecture from classmates.

Finally, certain classroom behaviours can be quite disruptive to the class. Out of respect for the other students in the class as well as the professor, please ensure that you do not:

- 1) arrive consistently late for class;
- 2) noisily start packing up early;
- 3) consistently leave before the class has finished;
- 4) talk amongst each other in class;
- 5) let your cell phone go off (or even worse, answer it!) in class.

## 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 information [SPARK Academic Integrity modules](#). These modules explain principles of academic honesty.

## 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.

## Electronic Devices During a Test/Examination

Electronic mobile devices of any kind are not allowed during a test or examination. 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.

## Academic Accommodation for Students with Disabilities

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

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

## Excerpt from Senate Policy on Academic Accommodation for Students with Disabilities:

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

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

### **Course Materials Copyright Information**

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

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

## Course Schedule – Fall Semester

<i>Week</i>	<i>Class Date</i>	<i>Topic</i>	<i>Text Chapter</i>
1	September 5	<i>Course Overview</i> <i>MindTap Demo</i> <i>Introduction to Statistics</i>	Syllabus  1, Appendix A
2	September 12	<i>Frequency Distributions</i>	2
3	September 19	<i>Central Tendency</i> <i>Variability</i>	3 4
4	September 26	<b>Test #1 (17%)</b>	
5	October 3	<i>z-scores: Location of Scores and Standardized Distributions</i>	5
6	October 10	<i>Probability</i> <i>Probability and Sample: The Distribution of Sample Means</i>	6 7
	<b>October 17</b>	<b>No Class: Reading Week</b>	
7	October 24	<i>Introduction to Hypothesis Testing</i>	8
8	October 31	<b>Test #2 (17%)</b>	
9	November 7	<i>Introduction to the t Statistic</i>	9
10	November 14	<i>Independent Samples t-test</i> <i>Mann-Whitney U Test</i>	10 20 (suppl.)
11	November 21	<i>Dependent (Related) Samples t-test</i> <i>Wilcoxon Signed-Ranks Test</i>	11 20 (suppl.)
12	November 28	<b>Test #3 (17%)</b>	
	December 5	<b>MindTap Problem Sets for Semester I Close @ 11:59pm (includes chapters 1 thru 11)</b>	

(continued for Semester II on next page)

## Winter Semester

<i>Week</i>	<i>Class Date</i>	<i>Topic</i>	<i>Text Chapter</i>
1	January 9	<i>Semester I Review</i>	
2	January 16	<i>Introduction to Analysis of Variance</i>	12
3	January 23	<i>Introduction to Analysis of Variance (cont'd)</i> <i>Kruskal-Wallis Test</i>	12 20 (suppl.)
4	January 30	<i>Two-Factor Analysis of Variance (Independent Measures)</i>	14
5	February 6	<i>Repeated-Measures Analysis of Variance</i> <i>Friedman Test</i>	13 20 (suppl.)
6	<b>February 13</b>	<b>Test # 4 (17%)</b>	
	<b>February 20</b>	<b>No Class: Reading Week</b>	
7	February 27	<i>Correlation</i>	15
8	March 5	<i>Introduction to Regression</i>	16
9	March 12	<i>The Chi-Square Statistic: Goodness of Fit and Test for Independence</i>	17
10	March 19	<i>Thinking Critically about Statistics</i>	TBD
11	March 26	<i>Review for Test #5</i>	
12	<b>April 2</b>	<b>Test #5 (17%)</b>	
	<b>April 9</b>	<b>MindTap Problem Sets for Semester II Close @ 11:59pm (includes chapters 12 thru 17)</b>	