

## York University Health Faculty Course Outline 2023-2024

Course: PSYCH. 2020 6.0E - Statistical Methods I and II

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Lectures (Synchronous): Tuesdays 8:30-10:30 online Zoom meetings via eClass

Tutorials (Synchronous): Thursdays 8:30-10:30 online Zoom meetings via eClass

Text: Hurlburt, R. T. (2017). Comprehending Behavioral Statistics. (6<sup>th</sup> Edition) –**DON'T GET THE 5th EDITION!** – Dubuque, Indiana: Kendall Hunt.

- **Here is where you can buy a digital copy:**

<https://he.kendallhunt.com/product/comprehending-behavioral-statistics>

**Prerequisite or Co-requisite (STRICLY 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

**Course Description:** Welcome to the most fun course you will ever take! This course is designed to provide the student with the statistical skills necessary to analyse and understand the data from psychological research. Topics covered will include basic concepts of measurement, measures of central tendency, variability, and relationship. As well, selected inferential statistics will be covered (e.g. tests on correlations and mean differences). You should have a reasonably good working knowledge of high school algebra, but there will be NO calculus or matrix algebra in this course.

**Tutorials:** Students will be required to attend a weekly ONLINE tutorial. The tutorial's purpose is to review important topics discussed in the lecture and text, occasionally introduce new material, conduct review sessions for upcoming tests, take up assignments and tests, and provide an opportunity for students to ask questions.

### **eClass IMPORTANT NOTE:**

Make sure you know how to use York University's eClass system, because it is an amazing resource. and because we will be posting a number of important announcements and documents on eClass. You will be responsible for everything posted on eClass for this course, so do check it out. **All lectures and tutorials will be delivered online synchronously (live), via Zoom, and ALL TESTS will be held in-person, on campus.**

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**Office Hours:** The learning of statistics is an additive process. That is to say, concepts introduced in the course will continually be reappearing, expanded upon, and related to new material. For this reason, it is critical that students obtain a clear understanding of the topics as they are presented in the course. Do NOT get behind! If you are having difficulty grasping any of the concepts discussed in the course, you are strongly advised to email your TA.

**Grading:** The learning of statistics tends to be facilitated by (a) frequent testing (both for diagnostic purposes and to increase frequency of studying) and (b) practising the material. Therefore, 80% of the final grade will be determined by four **in-person** tests (worth 20% each). As well, there will be 4 practice assignments posted on eClass during each term (due dates TBA), totalling 20% of the final grade. While these practice assignments are not worth a large proportion of the final grade, they are VERY IMPORTANT. They are excellent for diagnosing problems early in the course (before you get too far behind), and the practice they provide can mean the difference between a good and poor grade. **Note:** It will be necessary to do the assignments in groups of 4 people (to facilitate learning). Therefore, find 3 other people to work with and let Lina know who they are (SOON). Each group will hand in ONE group assignment, and all of the group will receive the same grade. **Note:** As soon as your groups are formed make a list of everyone's name, email address, and phone number, and pass it in to your TA (You should also circulate this list amongst your group members.)

### 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

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- Correlation  $\chi^2$  (Chi-Square)
- One-sample and Two independent samples t-test
- Paired samples t-test
- Review of basic statistical concepts
- One-way Independent Groups ANOVA (with multiple comparisons)
- Two-way Independent Groups ANOVA (with interaction)
- One-way Repeated Measures ANOVA
- Correlation
- Simple Regression
- Multiple Regression

### 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 90, B+ = 75 to 79, etc.)

(For a full description of York grading system see the York University Undergraduate Calendar.)

### **Missed Tests and Late Assignments**

There have been increasing problems with missed tests in the past (particularly with respect to the misuse of the right to write makeup tests), so please read this section carefully. **Normally**, a student who misses a test or hands in an assignment late will be scored 0 unless the student has a valid medical reason that she or he was medically unable to write the test.

Although we normally only accept medical reasons for missing tests, we do realize that there are sometimes disasters or other events beyond a student's control that force them to miss a test, so if this happens to you, please do speak to us. But do it **ahead** of time, OK?

**PLEASE NOTE: ALL MAKEUP TESTS WILL BE SCHEDULED IN ONE BIG MAKEUP SESSION AT THE END OF THE COURSE (IN APRIL OR MAY).**

### **Important New Psychology Department Requirements Regarding Missed Tests:**

For any missed tests or late assignments, students **MUST** complete the following online form 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 test/assignment.

### **Add/Drop Deadlines**

For a list of all important dates please refer to: Fall/Winter 2023-2024 – Important Dates

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|   | <b>FALL<br/>(F)</b> | <b>YEAR<br/>(Y)</b> | <b>WINTER<br/>(W)</b> |
|---|---------------------|---------------------|-----------------------|
| 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)               | Sept. 28            | Sept 28             | Jan. 31               |
| Drop deadline: Last date to drop a course without receiving a grade (also see Financial Deadlines)          | Nov. 8              | Feb. 8              | March 11              |
| Course Withdrawal Period (withdraw from a course and receive a grade of "W" on transcript – see note below) | Nov. 9 -<br>Dec. 5  | Feb. 9 -<br>Apr. 8  | March 12 -<br>Apr. 8  |

**\*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**

Since all Lectures and Tutorials and tests will be held online during class time, students will need access to a computer and the internet.

### **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

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Policy) and/or “encouraging, enabling or causing others” (article 2.1.10 from the Senate Policy) to cheat.

### **Electronic Devices During a Test/Examination**

**ALL TESTS WILL BE HELD IN-PERSON, ON THE YORK UNIVERSITY CAMPUS.**

### **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 [York University Accessibility Hub](#) is your online stop for accessibility on campus. The [Accessibility Hub](#) provides tools, assistance and resources. Policy Statement.

**Policy:** York University shall make reasonable and appropriate accommodations and adaptations in order to promote the ability of students with disabilities to fulfill the academic requirements of their programs.

The nature and extent of accommodations shall be consistent with and supportive of the integrity of the curriculum and of the academic standards of programs or courses. Provided that students have given sufficient notice about their accommodation needs, instructors shall take reasonable steps to accommodate these needs in a manner consistent with the guidelines established hereunder.

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 PSYCH 2020 course at York University and are the property of the instructor unless otherwise stated. All lecture and tutorial recordings are the intellectual property of the Instructor/TA and are to be used only for the purposes of this course. (They are not to be copied, or used anywhere else.) 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](#).

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### Lecture Schedule and Topics to be Covered

**Preamble:** Since the textbook is generally a thorough, excellent one, the lecture material will follow the textbook closely. However, some additional topics not mentioned in the text will be discussed in class. It is strongly recommended that you read the material in the text before it is covered in class. (Reading ahead of time is the best way to ensure success in this course.) All Lectures will be held ONLINE via Zoom.

### Tentative Lecture & Test Schedule:

NOTE: EXCEPT FOR TESTS, THE DATES BELOW ARE **APPROXIMATE** AND MAY CHANGE

| <u>Week of:</u>            | <u>Topics:</u>   | <u>Chapters to Read:</u> |
|----------------------------|--|--------------------------|
| -----                      |  |                          |
| Sept 7:                    | First meeting: <b>Very important!</b>  |                          |
| Sept. 11-15                | Introduction, Math Concepts Frequency Distributions                              | 1 & 2                    |
| Sept. 18-22                | Frequency Distributions  | 3                        |
| Sept. 25-29.               | Measures of Central Tendency   | 4                        |
| Oct. 2-6                   | Measures of Variation  | 5                        |
| Oct. 9-13                  | <b>FALL READING WEEK – NO CLASSES</b>  |                          |
| Oct. 16-20                 | Using Frequency Distributions  | 6                        |
| Oct 24                     | Review   |                          |
| Oct. 26                    | <b><u>Test #1: IN-PERSON!</u></b> (Location TBA, Covering Chapters 1 through 6)  |                          |
| Oct. 30- Nov. 3            | Samples and Sampling Distributions   | 7                        |
| Nov. 6-10                  | Parameter Estimation   | 8                        |
| Nov. 13-17                 | Evaluating Hypotheses  | 9                        |
| Nov. 20-24                 | Evaluating Hypotheses, Single-Sample Mean Inferences                             | 10                       |
| Nov. 27– Dec. 1            | Single-Sample Mean Inferences  | 10                       |
| Dec. 5                     | <b><u>Test #2: IN-PERSON!</u></b> (Location TBA, Covering Chapters 7 through 10) |                          |
| <b><u>WINTER TERM:</u></b> |  |                          |
| Jan. 8-12                  | Inferences about 2 Independent Means   | 11                       |

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|                  |   |                         |
|------------------|---|-------------------------|
| Jan. 15-19       | Inferences about 2 Dependent Means  | 12                      |
| Jan. 22-26       | Statistical Power   | 13 (but SKIP 13.3)      |
| Jan. 29 - Feb. 2 | One-way Analysis of Variance (ANOVA)  | 14                      |
| Feb. 5-9         | ANOVA, Multiple Comparisons (Post Hoc Tests only)   | 14, 15 (Sect.15.1 only) |
| Feb. 12-16       | Multiple Comparisons  | 15.1, part of 15.2      |
| Feb. 19-23       | <b>WINTER READING WEEK – NO CLASSES</b>   |                         |
| Feb. 27          | Review  |                         |
| Feb. 29          | <b><u>Test #3: IN PERSON!</u></b> (Location TBA, Covering Chapters 11 through Section 15.1 of Chapter 15) |                         |
| Mar. 4-8         | Two-way Analysis of Variance  | 15 (but SKIP 15.3)      |
| Mar. 11-15       | Correlation   | 16                      |
| Mar. 18-22       | Linear Regression   | 17                      |
| Mar. 25-29       | Linear Regression and <b>Review</b>   |                         |
| April 2          | Review  |                         |
| April 4          | <b><u>Test #4: IN PERSON!</u></b> (Location TBA, Covering Ch. 15 through 17)                              |                         |

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Good luck to you all, and again, welcome to the course!