

## PSYC 2021 (C) - STATISTICAL METHODS I

### Personnel

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### Class Time/Location:

Thursday's 8:30-11:30

Curtis Lecture Hall (CLH) - G

**Course Prerequisite(s) or corequisite: Course prerequisites are strictly enforced.**

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

### Required Text

Navarro, D. (2015). Learning statistics with R: A tutorial for psychology students and other beginners (version 0.5). <https://health.adelaide.edu.au/psychology/ccs/teaching/lsr/>

\* Note that the text can either be downloaded as a pdf or purchased in hard copy on the text website

## Course Description

This is the first course in statistics that most psychology (and other) majors take in university. This class will introduce you to the basic principles underlying statistical analysis in psychology and prepare you for future classes in statistics which will focus on more advanced techniques. More specifically, this course will introduce you to the type of variables utilized in psychology, statistical and graphical methods for summarizing variable information, two-variable correlation, and comparing two independent or paired-sample means. Null hypothesis significance testing will be introduced, however the focus will be on understanding relationships among variables. Data analysis using statistical software will be carried out with the open-source software *R* ([www.r-project.org](http://www.r-project.org)).

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

## Organization of the Course

There are two components to this course:

- 1) Lectures will cover the computational and conceptual aspects of data analysis (i.e., understanding different research designs, how to analyze these designs, and how to interpret the results). Lectures may also cover material that is not presented in the textbook.
- 2) Labs will cover the practical aspects of data analysis using the *R* software package (i.e., conducting the same procedures/analyses from the lectures with statistical software, and learning how to interpret the output from these programs). The lab portion of the course will be in the last hour or so of the class. If you have a laptop that you can bring to class you might find that helpful, but it is not necessary. In other words, instruction will be provided on how to run analyses in *R* during the class, and if you have a laptop you can run the analyses during class; however, it is not necessary as you can run the example analyses and exercises on your own time using what you learned in the class.

## Method of Evaluation

Final grades will be comprised of marks earned on:

1) *Class Tests* (Test 1: 30%; Test 2: 20%; Test 3: 20%)

Each class test will include questions from the text and lecture notes, including both theory questions and questions which require you to interpret *R* input/output (you will not need to write out *R* code on tests).

Test 1 (October 12, 2017): Intro to Statistics, Research Design, Descriptive Statistics, Correlation, Graphing Data, Probability

Test 2 (November 9, 2017): Sampling , Hypothesis Testing

Test 3 (November 30, 2017): Categorical Data Analysis, Comparing Means

If you miss an exam, a make-up exam will only be scheduled if you have proper documentation. A Physician Statement can be found at:

<http://myacademicrecord.students.yorku.ca/pdf/attending-physicians-statement.pdf>. You must email your TA a copy of your documentation within 48 hours following the missed test in order to schedule a make-up test. The format of the make-up test may be different from the original test.

2) *Assignments* (2 X 15%)

There will be two assignments for the course that will require you to analyze data (including using *R*) and write up the results of the studies. You will be given the assignments one class before they are due.

### Assignment Due Dates:

Assignment #1: October 19, 2017

Assignment #2: November 23, 2017

You will be deducted 10% (of the 15% allotted to each assignment; i.e., 1.5% of your final grade) for each day (not including weekends) that your assignment is late.

**Important New Information Regarding Missed Tests/Late Assignments:** 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.

## Final Grading System

Percent	Letter Grade	Percent	Letter Grade
90 - 100	A+	60 - 64	C
80 - 89	A	55 - 59	D+
75 - 79	B+	50 - 54	D
70 - 74	B	40 - 49	E
65 - 60	C+	0 - 39	F

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.). (For a full description of York grading system see the York University Undergraduate Calendar - [Grading Scheme for 2017-18](#)).

## Notes

1. Cheating and plagiarism are serious issues that will not be tolerated. Please see: [Information about the Senate Policy on Academic Honesty](#) for details.
2. The last date for withdrawal from this course without receiving a grade is Nov. 10 (if you drop the course between Nov. 11 and Dec. 4 you will receive a grade of 'W' for withdrawal).
3. Prerequisites for the course are: PSYC 1010: Introduction to Psychology (min. grade of C).
4. For a full description of York's grading system see the York University Undergraduate Calendar at <http://calendars.students.yorku.ca/2017-2018/academic-and-financial-information/academic-services/grades-and-grading-schemes>

## 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 [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 PSYC 2021(C) 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.

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**Rough Schedule of Topics (i.e., modifications may need to be made based on the rate at which we are able to cover the material).**

<b>Day</b>	<b>Topic</b>	<b>Readings</b>	<b>Notes</b>
Sep. 7	Introduction	LSR - Ch. 1	Welcome!
Sep. 14	Research Design/Intro R	LSR - Ch. 2/3	
Sep. 21	Descriptive Statistics/ Correlation	LSR - Ch. 4/5	
Sep. 28	Graphing Data	LSR – Ch. 6/7/8.1	
Oct. 5	Probability	LSR – Ch. 9	
<b>Oct. 12</b>	<b>Test 1</b>	<b>LSR – Ch. 1-7,9</b>	
Oct. 12	Sampling/Estimation	LSR – Ch. 10	Assignment 1 Handed Out
Oct. 19	One-Sample $t$	LSR – Ch. 10	<b>Assignment 1 Due</b>
Oct. 26	Reading Week!!		
Nov. 2	Hypothesis Testing	LSR – Ch. 11	
<b>Nov. 9</b>	<b>Test 2</b>	<b>LSR – Ch. 10-11</b>	
Nov. 9	Categorical Data Analysis	LSR – Ch. 12	
Nov. 16	Categorical Data Analysis	LSR – Ch. 12	Assignment 2 Handed Out
Nov. 23	Comparing Two Means	LSR – Ch. 13	<b>Assignment 2 Due</b>
<b>Nov. 30</b>	<b>Test 3</b>	<b>LSR – Ch. 12-13</b>	