

**Faculty of Health**  
**Department of Psychology**  
**Location: Ross S130**  
**PSYC 3032M 3.0: INTERMEDIATE STATISTICS II**

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**Course Prerequisite(s): Course prerequisites are strictly enforced**

- HH/PSYC 1010 6.0 (Introduction to Psychology), with a minimum grade of C.
- HH/PSYC 2020 6.0 (Statistical Methods I and II) or substitute (e.g., HH/PSYC 2021 3.0 & HH/PSYC 2022 3.0)
- HH/PSYC 2030 3.0 (Introduction to Research Methods)
- HH/PSYC 3031 3.0 (Intermediate Statistics I)
- Completed at least 54 earned credits

**Course Credit Exclusions**

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

**Course Description**

This course provides students with the opportunity to apply, consolidate, and extend their statistical analysis skills to realistic psychological data for independent groups designs, repeated measures designs and correlational designs. Effect sizes and hypothesis testing will be covered for all types of hypotheses, including mean differences, interactions among discrete and/or continuous variables, correlation/regression, multiple regression, etc. An important component of the course is the use of the statistical software package R for all analyses.

**Course Format**

This course will be delivered in a blended format, namely a combination of in-class and online learning. Online materials, activities, etc. will be available to students throughout the course, while in-class time will be reduced and will be used to support and reinforce learning, demonstrate the material through examples and exercises, etc.

**Course Learning Outcomes**

- Students will be able to define hypotheses, and distinguish between types of variables (predictors, outcomes, mediators, moderators, etc.).
- Students will be able to identify and conduct the appropriate analysis(es) for intermediate level research question(s)/hypothesis(es), including multiple predictor models, moderation, and mediation.
- Students will be able to compare/contrast the distinct roles of hypothesis testing, effect sizes and confidence intervals.
- Students will be able to describe the limitations of the statistical analyses chosen.
- Students will be able to conduct and interpret the appropriate data analysis using statistical software.

- Students will be able to interpret and communicate their results in APA format.

### Specific Learning Objectives

- Expose students to different types of research designs in psychology
- Explain and critique existing methodologies
- Provide students the opportunity to analyse psychological data using intermediate-level statistics (i.e., methods beyond those learned in previous courses, but not at the level of a graduate course)
- Expose students to the use of data analytic software for analysis of psychological data
- Provide students the opportunity to think critically about applications of psychological findings
- Provide students the opportunity to interpret and communicate results effectively

### Potential Textbooks (Online and Hard copy)

Foster et al. (2018): *An introduction to psychological Statistics*.

<https://open.umn.edu/opentextbooks/textbooks/an-introduction-to-psychological-statistics>

Navarro, D. J. (2016). *Learning statistics with R: A tutorial for psychology students and other beginners (Version 0.6)*. Retrieved from <https://learningstatisticswithr.com/>

Fife, D. (2021). The Order of the Statistical Jedi. Retrieved from [https://quantpsych.net/stats\\_modeling/index.html](https://quantpsych.net/stats_modeling/index.html)

### Online Resources

Wickham's and Golemund's R for Data Science <https://r4ds.had.co.nz/>

R Graphics Cookbook - <http://www.cookbook-r.com/>

Steve Nydick's [\*Introduction to R for Psychologists\*](#)

APA (2016). *Publication manual of the American Psychological Association*. Washington, DC: American Psychological Association.

Nicol, A. A. M., & Pexman, P. M. (2010). *Presenting your findings: A practical guide for creating tables*. Washington, DC: American Psychological Association.

Osborne, J. W. (2012). *Best practices in data cleaning*. Los Angeles, CA: Sage Publications Inc.

RStudio Cloud Primers - <https://rstudio.cloud/learn/primers>

RTips - <http://pj.freefaculty.org/R/statsRus.html>

R Cheatsheets - <https://www.rstudio.com/resources/cheatsheets/>

Choosing appropriate plots and example R code - <https://www.data-to-viz.com/>

sQuick R - <http://www.statmethods.net/index.html>

R bootcamp - <https://www.jaredknowles.com/r-bootcamp/>

Searching for R help made easy - <https://www.rdocumentation.org/>

### Course Requirements and Assessment:

Assessment	Weighting
Assignments	5 x 10%
Quizzes	5 x 2%
In-class Exercises	15%
Midterm	25%
<b>Total</b>	<b>100%</b>

**Assignments:** The assignments will provide students with the opportunity to apply the statistical concepts to realistic psychological data. Students will use statistical software to manage, explore and analyse their data. It is expected that you complete these activities individually, though some discussion about the subject matter between students is generally reasonable.

**Midterm:** The midterm exam will evaluate learning of the theoretical and practical aspects of the course. For example, in what situations to apply specific approaches, what issues may affect the validity of the analyses conducted, what alternative approaches are available when there are issues with the data (e.g., assumption violation, missing data). Interpretation of software output will also be included.

**Online Quizzes:** Online quizzes will be used to monitor learning and ensure that students are staying on top of weekly readings and lecture material.

**In-class Exercises:** Throughout the course, we will be construct R scripts to analyze data that is related to the theoretical components of the lectures. Students are expected to attempt the exercise files distributed in class, and submit HTML rendered version of these exercises. Each exercise will be evaluated using a pass-fail rubric.

## Course Schedule

<i>Date</i>	<i>Topic</i>	<i>Assignment</i>	<i>Readings</i>
Jan 11	Course Introduction Review of R and Rstudio		
Jan 18	Review of Descriptive and Inferential Statistics Graphics in R	Quiz 1	
Jan 25	Introduction to Correlation Introduction to Simple Linear Regression	A1	
Feb 1	Properties of Regression Models	Quiz 2	
Feb 8	Multiple Regression Model	A2	
Feb 15	Categorical Predictor Variables	Quiz 3	
Feb 22	<b><i>READING WEEK</i></b>		
Mar 1	<b><i>Midterm</i></b>		
Mar 8	Assumptions and Model Diagnostics (part 1)	A3	
Mar 15	Assumptions and Model Diagnostics (part 2)	Quiz 4	
Mar 22	Mixing Qualitative and Quantitative Predictors (part 1)	A4	
Mar 29	Mixing Qualitative and Quantitative Predictors (part 2)	Quiz 5	
April 5	Path Analysis	A5	

The schedule above is in the nature of a *prediction and* is not a guarantee or contract.

## 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.).

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

**Deadlines for dropping the course:** See here for further dates and information

<https://registrar.yorku.ca/enrol/dates/2021-2022/fall-winter>

## **POLICY ON MISSED ASSIGNMENTS**

1. Students are expected to submit each assignment ***prior to the beginning of the specified lecture***. Late assignments will not be accepted. **If you miss an assignment for no documented reason(s), you will receive a grade of zero.** Note that “my dog at my homework” or “my computer crashed and I lost my entire assignment” are not valid reasons for missing an assignment deadline; if you are not already, always backup your important day-to-day working files up by using some (hopefully free) cloud storage utility on your computer(s), such as Dropbox, OneDrive, Google Drive, iCloud, etc.
2. **Within 48 hours of a missed assignment, students must contact the course instructor via email, and documentation must be provided within one week.** In this email, please (a) outline the reason for your absence, and (b) confirm that you have medical or other relevant documentation to support this reason. Be sure to note your course section and your full name and student number in the subject of your email.
3. Once you have contacted the course instructor, you will need to submit an attending physician’s statement. This should be brought to your instructor’s mailbox or, in extreme cases, scanned and emailed.

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**Academic Integrity:** All students are expected to abide by the university’s policies on academic integrity. The relevant documents can be found here:

<http://www.yorku.ca/academicintegrity/students/index.htm>. Although not limited to the following four, any student found (1) looking at another student’s examination; (2) communicating with another student during the examination; (3) in possession of unauthorized documents (e.g., notes) in the examination; or, (4) receiving unauthorized communications from outside the examination room will be considered to be in violation of one or more of the university’s academic integrity policies and appropriate disciplinary steps will be taken.

## **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.** Sufficient notice is needed so that reasonable steps for accommodation can be discussed. Accommodations for tests/exams normally require three (3) weeks (21 days) before the scheduled test/exam to arrange. <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](#).

**Religious Accommodation.** Appropriate accommodation will be made in accordance with the policies of the university. Please see the instructor at your earliest opportunity if you discover issues relating to your religious practices and the expectations of the course.

### **Other Important Information:**

Code of Student Rights and Responsibilities

<http://www.yorku.ca/secretariat/policies/document.php?document=202>

York University Secretariat:

<http://www.yorku.ca/secretariat/index.html>

Policy on plagiarism and academic honesty:

<http://www.yorku.ca/academicintegrity/students/index.htm>

<http://www.yorku.ca/univsec/policies/document.php?document=69>

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### **Course Materials Copyright Information**

The course materials are designed for use as part of the PSYC3032 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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