

PSYC*6380, Course Outline: Winter 2019

General Information

Course Title: Psychological Applications of Multivariate Analysis

Course Description:

This course builds on the concepts and techniques taught in PSYC*6060. At the end of this course, successful students will be informed, thoughtful, ethical, and skilled users of multivariate statistical techniques. Emphasis will be placed on openness and transparency in research, data exploration, parameter estimation, the crucial distinction between exploration and confirmation, and model testing and comparison. The statistical software suite 'R' will be used in the 'R Studio' environment. In addition to in-class training, students will take [Data Camp courses](https://www.datacamp.com/) (<https://www.datacamp.com/>) to facilitate their acquisition of data analysis skills in R.

Credit Weight: 0.50

Academic Department (or campus): Psychology

Semester Offering: Winter 2019

Class Schedule and Location: Tuesdays, 11:30 AM to 2:20 PM; ROZH 108

Instructor Information

Instructor Name: Ian Newby-Clark

Instructor Email: inewby@uoguelph.ca

Office location and office hours: MCKN 3006; By Appointment

GTA Information

GTA Name: Ms. Gillian Maurice

GTA Email: gmaurice@uoguelph.ca

GTA office location and office hours: BWH 219; By Appointment

Course Content

Specific Learning Outcomes:

By the end of this course, a successful student will be able to:

1. **explain and apply** ethical considerations to the conduct of research in quantitative psychological science.

2. **demonstrate** the ability to import, manage, and analyze data using multivariate techniques in R.
3. **justify** an approach to a multivariate data analytic problem given the nature of the data and the nature of the problem.
4. **effectively communicate** the results of multivariate statistical analyses through **clear and persuasive writing (including graphs)**.

Lecture Content:

Each class will consist of a quiz, Q and A about assigned readings, interactive lecture, and practice with R in R Studio. The early part of the course will focus on importing and managing data, and various exploratory data analytic techniques. Next, there will be a review and deeper exploration of ordinary least squares (OLS) regression and its underlying assumptions, as well as a consideration of exploratory factor analysis. The later part of the course will focus on structural equation modeling, and its advantages over OLS regression. Model testing and model comparison will be a particular focus. Throughout the course, emphasis will be placed on parameter estimation and confidence intervals in lieu of NHST.

Course Assignments and Tests:

Assignment or Test	Due Date	Contribution to Final Mark (%)	Learning Outcomes Assessed
Weekly Quiz	Week 2 to Week 12	45% (5% each; best 9 of 11)	1 and 3
Written Assignment #1	Feb 15 th	25%	1, 2, 3, 4
Written Assignment #2	April 5 th	30%	1, 2, 3, 4

Course Resources

Required Texts:

Deep knowledge of the department's "[Statistical Methods in Theses: Guidelines and Explanations](https://www.uoguelph.ca/psychology/graduate/thesis-statistics)" document (<https://www.uoguelph.ca/psychology/graduate/thesis-statistics>) is required. In addition, readings and other resources referenced in the document will be assigned throughout the course.

Readings from *Handbook of Ethics in Quantitative Methodology* by A. T. Panter and Sonya K. Sterba. This book is available as an online resource in our library.

Other Resources:

Students are required to have reliable [access to Data Camp \(https://www.datacamp.com/\)](https://www.datacamp.com/).

Course Policies

Grading Policies

[Graduate Grade interpretation](#)

Course Policy regarding use of electronic devices and recording of lectures:

Electronic recording of classes is expressly forbidden without consent of the instructor. When recordings are permitted they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor.

University Policies

Academic Consideration

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the academic calendar for information on regulations and procedures for

Academic Consideration:

[Grounds for Academic Consideration](#)

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring.

University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the [Graduate Calendar](#)

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact [Student Accessibility Services](#) as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 54335 or email accessibility@uoguelph.ca or the [Student Accessibility Services Website](#)

Course Evaluation Information

Please refer to the [Course and Instructor Evaluation Website](#).

Drop date

The last date to drop one-semester courses, without academic penalty, is Friday March 8th, 2018. For regulations and procedures for Dropping Courses, see the [Schedule of Dates in the Academic Calendar](#). [Current Graduate Calendar](#)

Additional Course Information

Course instructors are allowed to use software to help in detecting plagiarism or unauthorized copying of student assignments. Plagiarism is one of the most common types of academic misconduct on our campus. Plagiarism involves students using the work, ideas and/or the exact wording of other people or sources without giving proper credit to others for the work, ideas and/or words in their papers. Students can unintentionally commit misconduct because they do not know how to reference outside sources properly or because they don't check their work carefully enough before handing it in. Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

In this course, your instructor will be using Turnitin.com to detect possible plagiarism, unauthorized collaboration or copying as part of the ongoing efforts to prevent plagiarism in the College of Social and Applied Human Sciences.

A major benefit of using Turnitin is that students will be able to educate and empower themselves in preventing misconduct. In this course, you may screen your own assignments through Turnitin as many times as you wish before the due date. You will be able to see and print reports that show you exactly where you have properly and improperly referenced the outside sources and materials in your assignment.