

# PSYC\*6060, Course Outline: Fall 2015

## General Information

**Course Title:** Research Design and Statistics

**Course Description:**

This course covers non-parametric and parametric hypothesis testing and estimation, analysis of variance, multiple correlation, and multiple regression. Current controversial issues are presented. There is also an emphasis on using R (statistical software) to conduct analyses.

**Credit Weight:** 0.50

**Academic Department (or campus):** Psychology

**Semester Offering:** F15

**Class Schedule and Location:**

Lecture: Tuesday, 8:30am – 11:20am, MCKN 306

Lab: Tuesday, 12:30pm – 1:20pm, MCKN 028

Office Hours: TBA

## Instructor Information

Instructor Name: David Stanley

Instructor Email: 6060guelph@gmail.com

Office location and office hours: TBA

## GTA Information

GTA Name: Scott Cassidy

GTA Email: cassidys@uoguelph.ca

GTA office location and office hours: TBA

## Course Content

**Specific Learning Outcomes:**

1. Understand and apply advanced concepts in statistics to data analysis in psychology.
2. Recognize and describe complex research methodologies.

3. Show an ability to analyze and interpret data to test a claim.
4. Demonstrate a skill set with statistical analysis software.
5. Evaluate the nature and extent of graphs needed to support analyses.
6. Evaluate the graphs associated with analyses.
7. Write with appropriate vocabulary, APA style adherence, and few grammatical or functional errors.
8. Writes in a sophisticated manner clearly conveying the message of the writer to a target audience.
9. Locate and use information about R from a variety of resources and formats including books, R help files, Google searches, etc.

**Lecture Content:**

- Lecture 1. Introduction to R / Replication crisis / Meta-analysis
  - Lecture 2. More on R / Replication crisis / Meta-analysis (continued)
  - Lecture 3. Creating of statistical graphs
  - Lecture 4. Exploring assumptions
  - Lecture 5. Correlation
  - Lecture 6. Multiple regression
  - Lecture 7. Multiple regression (continued)
  - Lecture 8. Comparing 2 means
  - Lecture 9. Comparing several means
  - Lecture 10. Factorial ANOVA
- Repeated Measures ANOVA handout will be provided.

**Labs:**

Each week there will be a lab quiz that consists primarily of the material covered in lecture the previous week. Due to the cumulative nature of the course, some material in the lab quiz may come from lectures covered much earlier in the course.

## Course Assignments and Tests:

**Lecture Quiz.** There will be a lecture quiz at the beginning of each class starting with lecture 2. This quiz will begin at 8:30 and end at 8:45.

**Lab Quiz.** There will be a quizzes in many (but not all) labs starting with the lab following lecture 2. The lab quiz will **primarily** cover material from the lecture the previous few weeks. 85% of each lab quiz grade will be obtained from individual performance during the lab. 15% of each lab quiz grade will be obtained from group completion (groups of 3 or 4) of the same lab quiz. Individual lab quizzes are due at the end of each lab. The group lab quiz will be due the following day at noon. Group quizzes submitted late (no grace period) will receive a 20% penalty per day. Submission of group quizzes will occur via email. Group members must be cc'd on the email submission.

**Journal Research Project.** Students will break into project groups based on their graduate area. NACS will break into two groups – Cognitive and Neuroscience if student numbers permit. Each group review the last 2 years of two journals in their field (specified by me) to determine the nature of the statistical methods used in those journals. Following this each group will jointly write a report summarizing their findings. Included in this report will be their initial perceptions of statistical techniques in their field (prior to collecting data) and conclusions about statistical approaches after reviewing the journal articles. The report will also contain a summary table about techniques used in each area. The report will also need to outline specific learning graduate school statistical learning goals for students in each group (as a whole) so that they can become the most effective researchers possible. A midterm submission of the coding file for each group will be part of the total grade. This file must summarize the last two years of one journal in terms of the statistical techniques used.

### Summary

Lecture Quizzes:	25%
Lab Quizzes:	25%
Journal Research Project:	50%
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	100%

**Final examination date and time:** No final exam.

**Final exam weighting:** No final exam

**Journal Research Project Midterm Due Date:** October 20, 2015

**Journal Research Project Final Assignment Due Date:** December 8, 2015

## Course Resources

**Required Texts:**

Field, A, Miles, J. & Field, Z. (2012). Discovering Statistics Using R. Sage.

Kline, R. B. (2008). Becoming a behavioral science researcher: A guide to producing research that matters. Guilford Press. Chicago

Additional academic articles will sometimes be assigned each week as part of the readings. Readings will be posted each week on Courselink.

**Other Resources:**

Navarrio, D. (2013) Learning Statistics With R. Version 0.40. [Free PDF [download](#)]

We will be using R and RStudio in class. Both are free software. You can download and install them with the links below. I encourage you to do so before the first class.

**R Download Links**

The link depends on your system see headings below. Install software at links in order.

**Windows users**

- 1) Install R software: [here](#)
- 2 ) Install RStudio: [here](#)

**MAC OSX:**

- 1) Install graphic software at this link first: [here](#)
- 2) Install R software. One of the two below depending on how new your OSX is.  
MAC OSX Mavericks/Yosemite: [here](#)  
MAC OSX (older): [here](#)
- 3) Install RStudio: [here](#)
- 4) Course Policies

## **Grading Policies**

### Lecture Quiz Grading:

Lecture quizzes are graded in the CourseLink Quiz program. The lowest lecture quiz will be dropped. A missed quiz, due to illness other reasons (e.g., **conferences**), will count as the lowest mark that is dropped in both cases. This policy is designed to facilitate attending conferences.

### Lab Quiz Grading:

Each lab quiz will be graded out of 10. Marks are assigned for correct numbers, writing style, and APA style.

Group lab quizzes submitted late (no grace period) will receive a 20% penalty per day. Submission of group quizzes will occur via email. Group members must be cc'd on the email submission to receive credit.

The lowest lab quiz will be dropped. The lowest lecture quiz will also be dropped. A missed quiz, due to illness other reasons (e.g., **conferences**), will count as the lowest mark that is dropped in both cases. This policy is designed to facilitate attending conferences.

## **Course Policy on Group Work:**

Lab assignments must be completed on an individual basis. Collaborations among students for the purposes of writing assignments are prohibited. Any student(s) suspected of unauthorized collaboration will be reported to the Dean's Office for an academic misconduct investigation (see Policy on Cheating & Academic Misconduct below). Note: It is possible to talk to fellow students to understanding the material needed to complete an assignment; however, you must write the assignment independently.

## **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](#)

### **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 the Student Accessibility Services (SAS) as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email [csd@uoguelph.ca](mailto:csd@uoguelph.ca) or see the [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 Nov 6, 2015. For regulations and procedures for Dropping Courses, see the Academic Calendar:

[Current Graduate Calendar](#)