PSQF 6250: Computer Packages for Statistical Analysis

Spring 2019 - Online Course

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THE UNIVERSITY OF IOWA

COLLEGE OF EDUCATION

Data does not give up their secrets easily. They must be tortured to confess.
– Jeff Hooper, Bell Labs

Course Description

This course aims to give students an introduction to using R for statistical analysis. Students will work through examples dealing with data cleaning, data manipulation, variable creation, descriptive statistics, figures, tables, and inferential statistical methods. Additional topics such as version control, markdown, and others will be discussed.

Course Objectives

By the end of the course, students should be comfortable doing data manipulation, cleaning, and analysis using R. This course will not teach you exactly what to do for every analysis, rather will attempt to give you tools to accomplish general data tasks and practice answering questions with data.

Textbook

No required textbook for purchase. There will be numerous online resources that will be used for the course. These are listed below and are posted on the ICON site. Note: You can click the links below and it will take you directly to the source on ICON.

git

- git - the simple guide – Accessed here: http://rogerdudler.github.io/git-guide/ or a cheat sheet http://rogerdudler.github.io/git-guide/files/git_cheat_sheet.pdf.

Markdown

- markdown-cheatsheet

R

- R for Data Science – Accessed here: http://r4ds.had.co.nz/
- Other optional documents found on ICON.

Course Requirements

Homework

Homework assignments will be used to give hands on experience with the software. These homework assignments will give you an opportunity to answer questions with data, interpret results, and receive feedback on them. Each assignment will be worth 15 points with 8 total assignments.

Quizzes

Online quizzes through ICON will be given roughly every week. These will test basic knowledge of statistical programs covered in the course. Each quiz will be worth 5 points with 12 total quizzes.

Project Proposal

A short, one page at most, description of the project. A brief discussion of the data to be used, the type of model to be used, and the rationale for the model. Although not necessary, it is encouraged to discuss your projects with the instructor prior to submission. The project proposal will be worth 20 points.

Project

Each student is required to do a project. The project will consist of a short data analysis cycle. This will take the following approximate structure: find some data, pose a question, read in data, manipulate data, descriptive statistics, inferential statistics, short conclusion. The project will take the form of a shortened paper, therefore will likely not be suitable as is for publication (although it could possibly be extended after the course for this). The project will be 100 points and will take the place of a final exam.

Grading

The final grade is based on the total points from homework assignments and the course project. Grades are posted regularly to ICON.

Homework assignments

120 points (15 points each – 8 assignments)

Project

100 points

Quizzes

60 points (5 points each – 12 quizzes)

Project Proposal

20 points

Point Breakdown

Guidelines are given below, plus and minus grades will be given as well.

A	270 to 300 points
B	240 to 269 points
C	210 to 239 points
D	180 to 209 points

Course and University Policies

Announcements and Communication

Any announcements regarding the course will be communicated via e-mail so please check it daily. Being on online course, submission of assignments and lectures will be posted to the course ICON site. Go to icon.uiowa.edu for access to the ICON site.

Adaptations and Modifications

Please inform me during the first two weeks if you require special adaptations or modifications to any assignment or due dates because of special circumstances such as learning disabilities, religious observances, or other appropriate needs.

Contesting a Grade

To contest a grade, please send me an e-mail detailing your reason within 48 hours of receiving the grade. This allows both of us time to think, reflect, and discuss the matter without taking class time from other students. When contesting a grade, provide a copy of the graded assignment.

Plagiarism

Unless you are otherwise instructed, your work should be entirely your own. Please take care in writing your term paper. You should always be writing in your own words, citing others' ideas, and quoting text as appropriate.

Other Information

Please be aware of University policy statements regarding academic misconduct, academic accommodations, student complaint procedures, etc. Consult the following websites:

- College policy on student complaints and dispute resolution `https://education.uiowa.edu/coe-policies/student-complaint-procedure`
- College policy on student academic misconduct (plagiarism and cheating) `https://education.uiowa.edu/coe-policies/student-academic-misconduct`
- Student disability services `https://sds.studentlife.uiowa.edu/`
- University statements on student rights and responsibilities `http://dos.uiowa.edu/policies/`
- This course is provided by the College of Education and the Division of Continuing Education. Policies on matters such as course requirements, grading, and sanctions for academic dishonesty are governed by the College of Education. Students wishing to add or drop this course after the official deadline must receive approval from the Dean of the College of Education. The University policy on cross enrollments is at `https://education.uiowa.edu/coe-policies/cross-enrollment-policy`