Statistical Methods II
STAT 211

Lectures: Monday and Wednesday, 12:30-1:50, Room: HH 226

Discussion: Tuesday, 11:00-11:50, Room: DBH 1423

Discussion section will primarily be used to cover case studies and the application of methods presented in class. In addition, homework questions will also be addressed during the discussion hour.

Course Web Site: Located at http://www.ics.uci.edu/~dgillen/STAT211/Statistics_211.html. Electronic copies of the course handouts and homework assignments as well as datasets used during the course will be posted on the web site.

Instructor: Dan Gillen
Professor and Chair
Department of Statistics
Office: 2038 Bren Hall (DBH)
Telephone: 4-9862
E-mail: dgillen@uci.edu
Office hours: Monday 2:00-3:00,
Tuesday 12:00-1:00,
and by appointment

Prerequisites: Statistics 210 (Statistical Methods I) or equivalent; or permission of instructor

Description: This course will provide an introduction to the principles of generalized regression models, with an emphasis on categorical data models. Categorical data occurs extensively in both observational and experimental studies, as well as in industrial applications. The course will focus on both theory and application of methods for data analysis. Problems will be motivated from a scientific perspective.


Reference texts:


Software/Computing: Examples that are presented in class are primarily done using the R statistical package, and it is recommended that R be used for homework assignments and exams. R is free software which can be downloaded from the web at http://www.r-project.org/. R can be installed onto Windows, Mac, or Unix machines. The R website also offers tutorials.
regarding the use of R. If you wish, it is possible to use other commercially available software packages such as Stata, Matlab, or SAS.

Homework: There will be a total of 6-7 homework assignments. Assignments will typically be due 1 to 1.5 weeks from the date they are handed out.

Midterm Exam: Tentatively scheduled for Wednesday, February 22nd. The exam will be in-class (closed-book, closed-note), and will cover material through the Wednesday, February 15th lecture.

Final Exam: The final exam is scheduled for Monday, March 20th 1:30-3:30pm. The final exam will be take-home and will consist of two portions. The first portion of the exam will consist of short answer questions similar to a comprehensive homework assignment. The second portion of the exam will be a complete statistical analysis and report pertaining to a particular scientific question. The final exam will be handed out on Monday, March 13th and due on Monday, March 20th by 3:30pm.

Grading: Homework: 35%
Midterm: 30%
Final: 35%

Academic honesty: All students are expected to abide by the UCI academic honesty policy (http://www.editor.uci.edu/catalogue/appx/appx.2.htm). Among other things, this means that copied homework solutions will receive no credit in the course. I encourage students to study and work together on homework. However, the work that is handed in should reflect only that student’s work. That is, obtaining help from other students in order to learn the METHODS of solution is allowed, but copying another student’s answer or copying from prior course keys is NOT.

Course Objectives: By the end of this course, the student should be able to do the following:

- Understand the assumptions made by OLS methods
- Formulate scientific questions involving continuous or categorical response data as regression problems
- Understand the theory underlying generalized (linear) regression models
- Fit logistic regression models and assess the scientific significance, precision, and interpretation of regression coefficients
- Fit Poisson regression models and assess the scientific significance, precision, and interpretation of regression coefficients
- Understand and fit generalized linear models in the presence of a mean-variance relationship
- Analyze multinomial response data in a regression context
- Interpret and critically evaluate regression analyses in scientific manuscripts and research presentations
- Describe regression methods and results for continuous and categorical data to a non-statistical audience

Course Evaluations: The University will run online course evaluations over a two-week period, during 9th and 10th week. This two-week evaluation window is scheduled to open at 12:01 a.m. on Monday of 9th week and close at 11:59 p.m. on Sunday before finals week.