Advanced Statistical Methodology
Stat 526 - Spring 2014

Tuesdays and Thursdays, 9:00 - 10:15am, REC 123

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Objectives: The course introduces statistical models for data analysis problems where least squares regression and standard ANOVA techniques do not apply. Its objectives are (1) to conceptually understand linear mixed effects models, log-linear and generalized linear models for count data, and survival models for the analysis of lifetime data, (2) to use these models in application to real data, (3) draw valid conclusions and clearly present the results.

Pre- and co-requisites: Pre-requisite STAT525. Co-requisite STAT528.

Required texts:

Recommended texts:

Computing: Open-source statistical software R on personal computers.

Attendance: Attendance is optional, but you are responsible for all the material covered in class.

Handouts: All handouts will be distributed via the course web page.

Communication: All announcements, as well as updates/corrections/hints for lecture notes and homeworks will be made via Piazza piazza.com/purdue/spring2014/stat526. Piazza is a question-and-answer platform for classes. It supports LaTeX, code formatting, embedding of images, and attaching of files. Please ask (and answer!) questions on Piazza. You can do this anonymously, and you can send questions or comments that are only visible to the instructor. I will not respond to questions by email.

Office hours: Wednesdays 9:00am-10:00am, or by appointment. Please come at the beginning of the office hour.
Homework: Homewoks are due by the beginning of the class at 9:00am, physical copy only. Any homeworks turned in afterward will not receive credit. Exceptions may be arranged if discussed in advance. Expect around 11 homeworks during the semester.

Homework policy: Please make the homework as easy to grade as possible:

- Each problem must be presented in order.
- Each problem should not exceed 3 pages.
- All code, graphs and tables must be included in the appropriate position in text (as opposed to adding them at the end), and appropriately labeled. Any graph or figure that is turned in without interpretation, or spans across more than one page will be ignored.
- R output should be included in the appropriate position, and edited with a word processor (e.g., Word or Latex). Please do not include pages of raw R output.

Exams: Two 2-hour evening midterm exams, and one 2-hour final. One class will be cancelled to compensate for each midterm. If you cannot attend an exam at the assigned time, notice must be given at least one week prior to the exam in order to decide on a different (most likely earlier) time.

Project: At the end of the semester groups of 3-4 students will perform a project analyzing a real-world problem.

- A month before the end of the semester, each group will submit a project proposal. The proposal will describe the scientific question to be addressed, the available data, and statistical analysis methods that will be used. I encourage you to talk to me before submitting the proposal.
- Each group will write a final report that will be due one week before the end of the class.

Breakdown of Grade: The final grade is based on a total of 500 points broken down into homeworks (100 pts), midterms (2 × 100 pts), project (100 pts), final exam (100 pts).

Re-grades: all re-grading requests should be made in writing one week after receiving the grade. The request should state the specific question that needs to be re-grades, as well as a short (1-2 sentences) explanation of why re-grading is necessary. The new grade can potentially be lower than the original grade.