



Syllabus

BST 464 Applied Linear Regression

Fall 2017

Tuesdays & Thursdays 11:00-12:30 in SRB 1.412

Instructor: Tanzy Love, tanzy_love@urmc.rochester.edu, 585-276-5559

Office Hours: Tanzy Love (rm 4.144) by appointment Wednesdays 12-2pm

TAs: Matthew Corsetti and David Burton (office hours TBD)

Course website: Blackboard, you can send email to me, TA's or other students on Blackboard
<https://learn.rochester.edu>

Basic Information

This is a class-room based class with occasional computer lab work and online notes and references.

Duties of Instructor: Course direction, lectures, writing homework and exams, grading exams, creating course grades, answering questions in class and by email.

Duties of Teaching Assistants (TAs): writing homework solutions, grading homework, grading exams, posting homework scores, answering questions in office hours and occasionally by email.

Course Description

Methods used in this class:

- Simple and multiple linear regression
- Analysis of variance (1-way and 2-way)
- Analysis of covariance
- Linear mixed effects model
- Non-linear models (logistic and Poisson)

For each method, we focus on:

- Interpreting a linear model
- Confidence intervals
- Hypothesis testing
- Residual analysis
- Model assumptions checking
- Outliers and measures of influence
- Prediction
- Transformation and remedial measures
- Model selection
- Main and interactions effects
- Multicollinearity



Course Aims and Objectives

At the end of this course, a student should be able to perform and explain a multiple linear regression with continuous and/or categorical predictors. This includes evaluating the appropriateness of the model, addressing problems, and considering the validity of the conclusions.

Applied linear regression is a useful generalization of the t-test and can be used to formulate and test many scientific hypotheses. However, it has strong assumptions and must be used appropriately. This course should enable all of the students to use these tools in their further research and consulting work.

Course Policies and Expectations

Students should complete all of the homework assignments on time. These will be returned to you weekly and in time to prepare for the exams.

Materials and Access

Required Text: Kutner, Nachtsheim, Neter, *Applied Linear Regression*

Software: R, <http://cran.us.r-project.org/>

Blackboard: learn.rochester.edu

Notes and homework posted on Blackboard. Emails will go out when they are available.

Assignments and Grading Procedures

Homework will generally be assigned every week on Thursday, and will generally be due the following Thursday after it is assigned. Grades will be based on homework (50%), a midterm exam (25%), and the final exam (25%). Grades are not curved, but are assigned on a graduate school scale: approximately 0-50% F 50-60% D 60-70% C 70-75% B- 75-80% B 80-85% B+ 85-90% A- 90-100% A

Academic Integrity

Academic integrity is a core value of the University of Rochester. Students who violate the University of Rochester University Policy on Academic Honesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since academic dishonesty harms the individual, other students, and the integrity of the University, policies on academic dishonesty are strictly enforced. For further information on the University of Rochester Policy on Academic Honesty, please visit the following website:

http://www.rochester.edu/college/honesty/docs/Academic_Honesty.pdf

Accommodations for Students with Disabilities

Students needing academic adjustments or accommodations because of a documented disability must contact the Disability Resource Coordinator for the school in which they are enrolled:

<http://www.rochester.edu/eoc/DisabilityCoordinators.html>

Course Schedule

Midterm exam will be approximately October 19, 2017. It will be closed-book in the classroom during normal class time.

A few instructor absences will be rescheduled or covered by other instructors.