Syllabus for STAT 632: Linear and Logistic Regression
Spring 2020

Instructor: Dr. Eric Fox
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Lecture:

Section 1	Tu 3:15PM – 4:55PM at SC-N 336 Th 3:15PM – 4:55PM at SC-N 207
Section 2	Tu 8:00PM – 9:40PM at SC-S 146 Th 8:00PM – 9:40PM at SC-S 146

Office Hours: Tu, Th 1:30-2:30 and 7:15-7:45PM, or by appointment

Website: Course materials will be posted on Blackboard.

Textbook: Simon Sheather. *A Modern Approach to Regression with R*, Springer, 2009.
Free electronic version: `http://library.csueastbay.edu/home`
Data sets and R code: `http://gattonweb.uky.edu/sheather/book/`

James, G., Witten, D., Hastie, T., and Tibshirani, R. *An Introduction to Statistical Learning with Applications in R*. Springer, 2013.
Free PDF version: `http://www-bcf.usc.edu/~gareth/ISL/`

Software:
R, can be downloaded here `https://www.r-project.org/`
RStudio, can be downloaded here `https://www.rstudio.com/`
LaTeX (optional), can be dowloaded here `https://www.latex-project.org/`

Course Topics:

- Simple linear regression
- Multiple linear regression, matrix notation
- Model diagnostics and transformations
- Variable selection
- Logistic regression
- Cross-validation
- Generalized least squares estimation

- Regularization (ridge regression and LASSO)
- Decision trees and random forests

Grading: There will be two midterm exams, each worth 20% of your grade. Due to the transition to online, homework will now be worth 60% of your grade. Your lowest **two** scoring homework assignments will be dropped.

- 20% Midterm 1
- 20% Midterm 2 (take-home)
- 60% Homework Assignments

Policy on Make-up Exams and Late Assignments: If you miss an exam due to an emergency or illness and provide documentation I may agree to a make-up, or count your other exams proportionally more. Late homework will not be accepted.

Student Learning Outcomes: Upon successful completion of this course, students will be able to:

- Apply statistical methodologies, including (a) simple and multiple linear regression, (b) model diagnostics and transformations, and (c) logistic regression.
- Derive and understand basic theory underlying these methodologies.
- Use R and RStudio to analyze data sets, estimate statistical models, and conduct model diagnostics.
- Understand and apply modern techniques such as cross-validation, regularization, and decision trees / random forests.
- Communicate statistical concepts clearly and appropriately to others.

Common Syllabus Items: Items such as policies on academic dishonesty, disability, and handling emergency situations can be found under "University Policies" on Blackboard.