

Syllabus for STAT 432: Introduction to Linear and Logistic Regression
Spring 2021

Instructor: Dr. Eric Fox
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Office: SC-N 303A

Lecture: Tu/Th 5:45–7:00 over Zoom

Office Hours: Tu/Th 1-2 and Wed 2-4, or by appointment
Zoom link: <https://csueb.zoom.us/j/502694714>

Website: Course materials will be posted on Blackboard.

Textbook: There is no required textbook. The following references are available for free on the internet:

James, G., Witten, D., Hastie, T., and Tibshirani, R. *An Introduction to Statistical Learning with Applications in R*. Springer, 2013.

PDF version: <https://statlearning.com/>

Sanford Weisberg. *Applied Linear Regression*, John Wiley & Sons, Fourth edition, 2014.

Free electronic version: <http://library.csueastbay.edu/home>

Diez, D.M., Barr, C.D. and Cetinkaya-Rundel M. *OpenIntro: Statistics*, Fourth edition, 2019.

PDF version: <https://www.openintro.org/>

Software:

R, can be downloaded here <https://www.r-project.org/>

RStudio, can be downloaded here <https://www.rstudio.com/>

Course Topics:

- Exploratory data analysis (scatter plots, histograms, box plots)
- Simple linear regression model
- Multiple linear regression model, matrix notation
- Least squares estimation
- Inference for linear regression models
- Model diagnostics and transformations
- Polynomial regression
- Variable selection
- Logistic regression

Grading: There will be two exams, each worth 30% of your grade. Homework will be assigned weekly or biweekly, and worth 20% of your grade. A written project will be due at the end of the semester, and worth 20% of your grade. For the project you will find a data set of interest, and then conduct a regression analysis using that data set.

- 60% Two Exams (take-home)
- 20% Homework Assignments
- 20% Project

Policy on Late Assignments: Late homework will generally not be accepted. However, your lowest scoring homework assignment will be dropped. I may agree to extensions on due dates if you are experiencing an emergency or illness.

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.
- Communicate statistical concepts clearly and appropriately to others.

Technology Requirements: This course will use the web conferencing software Zoom. To participate you will need a stable internet connection, and a laptop or desktop computer equipped with a webcam, microphone, and speakers. Please refer to the Zoom system requirements here.

Course Policies and Zoom Etiquette:

- All lectures will be delivered live during the scheduled class time, and attendance is highly recommended. Recordings of the sessions will be posted on Blackboard for students that cannot attend or have connectivity issues.
- Make sure that your audio is muted upon entry into the class.
- You may ask questions by using the chat function or by unmuting yourself. Please try to not disrupt the instructor or other students.

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