

MSDS 567
Statistical Models and Computing
Spring 2020

This course is about advanced statistical models and computing methods essential for applications in data science. The topics include advance topics in linear regression, causal inference, logistic regression, discrete choice models, generalized linear models, mixed effects models, bootstrap, EM-algorithm, Bayesian analysis and MCMC method.

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Office Hours: 2-3pm Tuesday or by appointment.

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Recommended Textbooks (NOT required):

Causal Inference for Statistics, Social, and Biomedical Sciences, An Introduction, Guido Imbens and Donald Rubin, Cambridge University Press.

Introduction to Categorical Data Analysis, 3rd Edition, Alan Agresti, Wiley.

Computational Statistics, 2nd Edition, Geof H. Givens, Jennifer A. Hoeting, Wiley;

An Introduction to Statistical Learning: with Applications in R, Gareth James, Daniela Witten, Trevor Hastie and Robert Tibshirani, Springer;

Bayesian Data Analysis, 3rd Edition, Andrew Gelman, John B. Carlin, Hal S. Stern and David, B. Rubin, Chapman & Hall;

Analysis of Longitudinal Data, 2nd Edition, Peter Diggle, Patrick Heagerty, Kung-Yee Liang and Scott Zeger, Oxford University Press;

An Introduction to R, <https://cran.r-project.org/doc/manuals/R-intro.pdf>.

Grading: Homework: 30%; Midterm: 30%; Final: 40%.