SOC 385L • Socl Stat: Lin Mod/Strc Eq Sys

46250 • Powers, Daniel A.
Meets MW 300pm-430pm BUR 136

Cross listed with SSC 385

PREREQUISITES: SOC384L or the equivalent (i.e., a prior graduate statistics course.)

OBJECTIVES: This course is oriented towards second semester graduate students in sociology. It provides an introduction to the use of multiple regression and related models. We will seek a balance between theory and practice. We will consider the basic statistical concepts necessary to apply these models, but we will not emphasize mathematical derivations and statistical theory per se. After completing this course, students should have enough knowledge to understand the main ideas and issues involved in most quantitative research articles in the major sociological journals. They should also be much better prepared to complete a major quantitative research project of their own or enroll in more advanced statistics courses.

COMPUTER: Several homework assignments will require the use of a computer and statistical software. Students may use any computer and statistical software to solve the homework problems but instruction will be provided in Stata.

TEXTBOOK: Applied Regression Analysis and Generalized Linear Models by John Fox

REQUIREMENTS AND GRADING: Homework will be due approximately every 2 weeks. There will be 7 homework assignments during the semester, but the lowest score will be automatically dropped (only the best 6 scores will be counted). There will also be a midterm exam and a final exam. In determining course grades, homework will count 120 points; the midterm exam will count 100 points; and the final exam will count 180 points. Course grades will be assigned as follows (out of a total of 400 points for the course): A 400-380; A- 379-360; B+ 359-340; B 339-320; B- 319-300; C+ 299-280; C 279-260; C- 259-240; D 239-220; F 219-0. I will give up to 5 bonus (i.e., additional or extra) points at the end of the semester for students with consistent and positive class participation. The final exam will be held during the regularly scheduled final examination time as determined for this class by the University. The exams are open-book but closed-computer.

TOPICS: introduction, simple regression, least squares estimation, mathematical assumptions of regression model, statistical inference, properties of estimators, MLE, multiple regression, dummy variables, interactions, analysis of covariance, analysis of variance, regression diagnostics, multicollinearity, heteroscedasticity, autocorrelation, generalized least squares, transformations, nonlinearities, generalized linear models.