GOV 391L
Statistical Analysis in Political Science II

Spring 2013, Unique # 39150

Tu, Th 12:30-2:00, Batts 5.108
Section: TBD

Professor: Stephen Jessee
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Office Hours: Tu 2:00-5:00, Batts 4.128

This course will introduce students to linear regression and related methods. As with most statistics courses, I expect that the course will require a significant time commitment from most students. The course will move at a fairly rapid pace, covering a good deal of material, so it is especially important that students keep up with the material and readings and speak with the professor or teaching assistant if they have any questions or concerns. The discussion section for the course is also extremely important for all students as it will focus on reviewing material, going over student questions and especially on introducing students to the computing tools used in the course.

Required Materials

There are two required books for the course:

- John Fox, *Applied Regression Analysis and Generalized Linear Models (2nd Edition)*. Sage Press.

- John Fox and Sanford Weisberg, *An R Companion to Applied Regression (2nd Edition)*. Sage Press.

It is often helpful to have other texts as references. Some recommended (though not required) texts are:

- John Kmenta, *Elements of Econometrics (2nd Edition)*. Michigan Press.

- Larry Schroeder et. al, *Understanding Regression Analysis: An Introductory Guide*. Sage Publications
[pdf posted on Blackboard]

- Damodar Gujarati, *Basic Econometrics (4th Edition)*. McGraw Hill.
[pdf of Appendices A (Statistics Review), B (Matrix Algebra) and C (Matrix Approach to Regression) posted on Blackboard]

-William H. Green, *Econometric Analysis (7th Edition)*. Prentice Hall.

For computing in the course, we will use the statistical package R, which can be downloaded free of charge at:

`http://cran.r-project.org/`

It is also recommended that students use an editor for writing commands in R rather than simply typing them into the command line. There are several options for this including the built-in script editor, which is fairly good in newer versions of R and which should probably serve most students quite well, as well as programs such as WinEdit, TinnR and Emacs, which is quite customizable but also quite a bit more complex. Whichever you choose, it is very important that you have a separate (clean) copy of your code in its own file for any work in this class.

Assignments, Exams and Grading

Evaluation in the course will be based on weekly problem sets, a midterm examination, a cumulative final examination, and class participation. The grade will be calculated based on the following percentages:

Problem Sets	25%
Midterm Examination (in class, date TBD)	25%
Final Examination (May 9 9am-noon)	40%
Class Participation	10%

Students are encouraged to work in groups on homeworks and studying for exams, but all problem sets and code should be written up individually. When appropriate, students should include a clean and well-commented copy of the `R` code used to generate their problem set answers along with the writeup. Assignments will only be accepted as hard copies and should never be emailed to the professor or TA without explicit prior approval.

Course Topics

Below is a list of the topics to be covered in this course. Those listed with asterisks are tentative and will depend on course timing and other considerations. I may also reserve some classes for review and applications of previously presented material. The corresponding reading in the main text as well as from the computing companion are also listed. I will likely supplement these readings with others from journals or posted on Blackboard. Each topic should usually take one or two class periods to cover. I will announce during class what topic(s) will be covered the following week and what readings should be done.

Topic	Applied Regression	R Companion
Introduction/What is Regression?	1-2	1.1-1.4, 2
Plotting Data/Linear Regression	3, 5 (skim 4)	3, 4.1
Statistical Inference for Linear Regression	6	-
Dummy Variables and Interaction Terms	7	4.2
ANOVA*	8	4.3
Regression Theory	9	-
Vector Geometry of Regression*	10	-
Outliers and Influential Observations	11	6.1
Non-Normality of Errors	12	6.2
Collinearity	13	6.5
Logistic and Probit Regression	14	5
Generalized Least Squares*	16	-
Instrumental Variables*	-	-