The goals of this course are to:
1. Enable you to read quantitative research intelligently
2. Teach you several basic techniques for quantitative hypothesis testing.
3. Enable you to manage and manipulate datasets for large-n research projects
4. Provide you skills for self-teaching or working with co-authors using more sophisticated techniques in the future.
5. Provide you with a working knowledge of STATA to facilitate 2-4.

The first part of the course focuses on the derivation, estimation, and application of linear regression. The second part of the course covers violations of the assumptions of the linear regression model and methods that are used when these assumptions are violated.

The course will cover both the derivation and properties of estimators, as well as practical applications through data analysis using STATA, a statistical software package. The goal of the course is to provide students with an introduction to the tools that are necessary to conduct quantitative research in political science.

**Teaching Assistant**
The School of IR has opted to make an additional investment in graduate training this year by providing a part-time teaching assistant for this course. Gloria Koo will provide weekly lab sections focused on learning to use STATA, a statistical software package.

**Required Text and Software**
*Other editions will also suffice. You may need to find the corresponding sections/pages, but I don’t anticipate that will be too difficult*
I will also post additional course readings on the course website,

STATA IC (version 10 or later). While this software is available on lab computers, I require each student to install a copy on their own computer. One of the assets you will leave this course with is a library of STATA.do files (i.e. code for data analysis) that you have written and annotated yourself, and which you can use as a template in future work.
Students with Disabilities
Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. The phone number for DSP is 213-740-0776. If you need assistance with the process, please contact me at the phone number or e-mail address above.

Academic Dishonesty
I take academic dishonesty seriously. Any student violating USC’s Academic Dishonesty or Student Conduct policies will earn an ‘F’ in the course and will be reported to the appropriate administrators for investigation. You should review the Trojan Integrity Guide: http://www.usc.edu/student-affairs/SJACS/forms/tio.pdf and the guide for avoiding plagiarism: http://www.usc.edu/student-affairs/SJACS/forms/tig.pdf

Assignments
Homework and Participation-50%
We will have a variety of homework assignments. Assignments will consist of short papers on research design, problem sets related to regression, and working with data sets in STATA. Homework will be assigned in class and will be due at the beginning of class on the due date. Late homework will not be accepted. If you do not turn in an assignment on time, you will receive a zero on that homework.

Final Paper-50%
Students are required to submit a final paper on the last day of class. In the paper, students should use the statistical skills learned in class to analyze data related to a topic of interest. They should be double-spaced and no longer than 20 pages (including tables, graphs, references, and appendices. I will discuss more details about the paper as the semester progresses. Essentially you will briefly outline a theory you want to examine empirically, then you are to present your research design and your statistical analysis. I do not want you to focus on theory development or explication in this paper. You only need to have enough theory to explain the hypotheses or prediction that you will test.

Access to STATA
Most of the homework assignments require access to STATA. Students can access STATA through the computer lab. You can also purchase STATA from the STATA Corporation.
**Schedule of Topics: Readings my change as the semester progresses**

**Week 1 – Course Overview. The Research Design Context.**  
Imbens and Rubin, Causal Inference in Statistics and Social Science, Chapter 1  
Science is Hard: "Do We Really Know What Makes Us Healthy?"

**Week 2 – Describing Data: Central Tendency, Deviations, and Correlation**  
Pollock, p. 111 - 174

**Week 3 – Introduction to Quantitative Hypothesis Testing**

**Week 4 - The Regression Approach to Political Science**  
Gujarati, Intro and Ch. 1  

**Week 5- Simple Linear Regression**  
Gujarati, Chapter 2 and 3

**Week 6 and 7 - Variance of B and Hypothesis Testing**  
Gujarati, Chapters 4 and 5, Review 3.3 and 3.4

We'll see how we're doing and adjust from here.

**Week 7 and 8-Assumptions of Linear Regression**  
Gujarati, Review Sections 3.2, 3.4, Appendix 3A, Chapter 4, 7.1

**Week 9- Model Performance, R-Squared and Predictions**  
Gujarati, Review Sections 3.5, 5.8-5.12, 7.5-7.8, 8.5-8.6, and 8.9  

**Week 10 -Dummy Variables, Interaction Terms, and Functional Form**  
Gujarati, Chapter 9  
Kam and Franzese Jr., Pages 1-7, 13-39, and 43-60

**Week 11: Multicollinearity**  
Gujarati, Chapter 10  

**Week 12 –Heteroskedasticity, Autocorrelation and Outliers**
Week 13: Logit and Probit
Gujarati, Chapter 15

Week 14: Regression Design: Put together research design and regression analysis

Week 15: Student presentation of final projects
FINAL PAPER DUE
Learning to use STATA
http://www.ats.ucla.edu/stat/stata/
http://dss.princeton.edu/online_help/stats_packages/stata/stata.htm
Supplementary materials available on the Internet:
An excellent introduction to statistics and research design is Statistics at Square One -- http://bmj.com/collections/statsbk/index.shtml, see especially Chapter 5 -- http://bmj.com/collections/statsbk/5.shtml
Good websites on statistics, econometrics, including free downloadable software for data entry, data analysis, research design, hypothesis testing, document preparation and presentation include:
http://davidmlane.com/hyperstat/index.html
http://members.aol.com/johnp71/javasta2.html#Freebies
Online readings on the scientific method:
http://www.lse.ac.uk/collections/lakatos/
http://galileoandeinstein.physics.virginia.edu/lectures/lecturelist.html
http://teacher.nsrl.rochester.edu/phy_labs/AppendixE/AppendixE.html
http://plato.stanford.edu/entries/popper/
http://www.brint.com/papers/science.htm
http://www.emory.edu/EDUCATION/mfp/Kuhsnap.html
http://wwwcdf.pd.infn.it/~loreti/science.html