Fall 2016: POLS-2400 Quantitative Techniques

Political Science Department

Northeastern University

Instructor	Sidita Kushi	Class Days	Wednesday & Friday
Office/Hours	905 Renaissance Park, WF 2-4pm, & by appt.	Class Hours	11:45am-1:25pm
E-Mail	kushi.s@husky.neu.edu	Location	140 Richards Hall

I. Course Description

This course present a basic development of social science statistical techniques and methods, emphasizing applications of value to policymakers and researchers alike in the fields of political science, international affairs, and public policy. The main topics and methods covered include descriptive statistics, basic probability, binomial and normal probability distributions, hypothesis testing, differences-between-groups tests, correlation, linear regression, and multiple regressions. We also examine how to generate and interpret statistical analyses through STATA and SPSS software. In addition to regular class meetings, we will meet for mandatory and optional computer lab sessions throughout the semester.

You will learn the math behind the statistics so that you have deep enough understanding to present your findings to a general audience. You will also learn to analyze statistical reports, articles, and policy conclusions with an eye towards catching bias or other sources of bad science or manipulation. Finally, you will learn how to explain statistical results in a way that is understandable to an intelligent but statistically untrained reader.

II. Objectives of Course

This course begins at an elementary level, assuming no prior knowledge of statistics, and ends with advanced techniques for running and interpreting multivariate analysis. Students will be given the opportunity to progress rapidly in their familiarity with a variety of quantitative methods for describing distributions and for analyzing the nature, significance, and strength of relationships between variables. By the end of the semester, students should have the tools not only to develop and test their own research hypotheses but also to read and critique the work of other authors in books and scholarly journals, aiming to find areas of the discipline that are in need of future research.

III. Course Requirements

Required Texts / Readings:

- Theresa Marchant-Shapiro, *Statistics for Political Analysis: Understanding the Numbers* (Sage Publications, 2015).
- Philip H. Pollock III, *A Stata Companion to Political Analysis*, 3rd ed. (CQ Press, 2015).

Also Required:

- A calculator with basic functions (add, subtract, multiply, divide, square root)
- STATA statistical software program (or SPSS, if you prefer) via myApps or purchased online (you may rent STATA for 6 months by searching for "STATA GradPlan").

IV. Grades

40% In-class Exams (2)
30% Assignments
20% Final Project
10% Class Participation

- ***Attendance*** **–**Attendance is mandatory and will be taken at every class. More than two (2) unexcused absences will result in 1/3 point of a grade from a student's final grade for each subsequent absence. Absences will only be excused with legitimate medical documentation or verification of extenuating circumstances.

- ***Assignments*****–** Homework assignments will be based on exercises from the textbooks and unique instructor-created problem sets. All assignments and due dates will be announced in advance. Often times, these will be peer graded the day they are due and so must be turned in at the **beginning of class on their due date**. Please bring a red pen to class for grading purposes. After I return them to you, please keep them together so you have easy access to them in case of questions about the subject or the grade.

  The assignments will take 2 forms:

  Exercises: Much of this course is focused on the math behind statistical techniques. As a result, in most cases, you will have exercises due as homework. Don't get behind on these—just like most math classes, the learning is linear. Each class period will build on what you learned in the previous class.

  Memos: These less frequent assignments are focused on the practical skills of using statistics in a work environment. I will provide or direct you to a dataset that you will analyze with STATA or SPSS in order to answer a political question. The goal with these is to answer a practical question using statistical analysis and explain the answer in a professional looking, short memo which would be understandable to a supervisor.

- ***Exams*** – Exams are administered in class and will cover all course material up to the exam day. These exams will be OPEN NOTES when it comes to **statistical formulas only**, therefore it is imperative that students take excellent notes and organize all handouts distributed in class. Exams will require students to interpret STATA outputs, provide calculations, and draw conclusions. Two (2) non-cumulative exams will be administered in the class.

- ***Final Project*****—** A final computer project will be assigned to wrap up the course. Students create a research hypothesis, find data, compile a dataset, and test their hypothesis using STATA or SPSS. More details will be provided later in the semester.

- ***Late assignments/exams*** **–** Since homework will often be reviewed in class on the day when they are due, late assignments will be penalized 50%. Homework submitted more than two days late will not be accepted. No late exams or quizzes will be given without legitimate medical documentation or verification of extenuating circumstances.

V. Course Policies

All cell phones and other forms of communication should be turned off during class meetings. In addition, while the use of laptop computers is permitted during class meetings, their use for anything other than class purposes is not appropriate.

POLICY ON INCOMPLETES

Except in the direst circumstances, Incompletes in this course are not possible. If I agree to an Incomplete, a form in the Political Science Department must be filled out, representing a contract between the student and the faculty member on when and how the course will be completed.

VI. Course Schedule*

MS – Marchant-Shapiro; P – Pollock

*The Professor reserves the right to change the syllabus as required by the course, but will provide at least 24 hours notice to students before confirming any changes.

Week	Dates	Topic	Reading Assignments
1	9/7, 9/9	Introduction: How to Lie with Statistics & Politics	MS: Ch. 1
2	9/14, 9/16	Levels of Measurement	MS: Ch 2
3	9/21, 9/23	Measures of Central Tendency & Dispersion	MS: Ch. 3 & 4
4	9/28, 9/30	STATA & Pictures of Data: Creating Charts and Graphs	MS: Ch. 8 P: *Skim over* Ch. 1, 2, 3 & 4
5	10/5, 10/7	The Normal Curve: Z-Scores and Probabilities	MS: Ch. 5
6	10/12, 10/14	Means, Proportion, & Hypothesis Testing	MS: Ch. 6 & 7 P: Ch. 6
7	10/19, 10/21	Hypothesis Testing & Review **EXAM 1**	MS: Ch. 7
8	10/26, 10/28	Chi Square and Statistical Significance testing	MS: Ch. 9 P: Ch. 7

9	11/2, 11/4	Measures of Association & Correlation Analysis	MS: Ch. 10 P. Review Ch. 7
10	11/9	Linear Regression **No class 11/11 – Veteran's Day**	MS: Ch. 11 & Ch. 12 P: Ch. 8
11	11/16, 11/18	Regression Diagnostics & Review **EXAM 2**	MS: Ch. 11
12	11/23, 11/25	**Thanksgiving Break**	
13	11/28, 11/30	Running a Multiple Regression	MS: Ch. 13 P: Ch. 9 & 10
14	12/7	**Last day of class:** Multiple Regression continued Intro to Logistic Regression	MS: Ch. 14 P: Ch. 11
15	TBD	Finals week: Presentations **FINAL PROJECTS DUE ON 12/12**	TBD

DEPARTMENT OF POLITICAL SCIENCE POLICY ON ACADEMIC HONESTY:

The Department of Political Science takes very seriously the issue of academic honesty. Any student who cheats on an exam or in the preparation and writing of a course assignment at minimum will fail the assignment in question, and may fail the course. Further, the Department can recommend that the student be put on academic probation (as outlined in the University's Code of Conduct). Individual faculty, with the support of the Department, can impose harsher penalties as they deem necessary.

Cheating includes plagiarism, which is defined broadly as taking ideas, concepts, or actual words of another person or author and passing them off as your own work. This includes but is not limited to "cut and paste" construction of a paper, buying a term paper, pulling a paper off of the Internet, or using materials from the Internet without acknowledging the source. A paper written by you (or anyone else) for another course is not acceptable for fulfilling the paper requirement of this course. If you have any questions regarding proper attribution of the work of others, contact your instructor prior to submitting the work for evaluation.