

UEP 254 Quantitative Reasoning

Fall 2013

Professors:

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Meeting Schedule:

Section 1: Tuesdays 9:00-11:30am, Eaton 208

Section 2: Thursdays 9:00-11:30am, Eaton 208

Labs: Wednesdays 4:30-6:00 pm and Fridays 12:00-2:30 pm, Eaton 208

Office Hours:

By appointment: Tatjana or Marji

Deniz: XX

Yunwen: XX

Course Description

This course promotes critical thinking through the use of statistics. Basic data analysis tools relevant to research, thesis work, and policy analysis are explored. This includes but is not limited to measurement issues, data collection strategies, understanding probability, and methods of data analysis. Students will gain proficiency in a statistical software package, namely STATA. The goal of this course is to promote statistical literacy among students, including the ability to fully comprehend basic statistics represented in academic journal articles and interpret statistical tables. This course will also prepare students for more advanced coursework in statistics.

Proficiency in college-level algebra is a pre-requisite for this course.

Required Textbooks and Statistical Software

The Essentials of Political Analysis, 4th Edition 2009, by Philip H. Pollock III, and its associated workbook, A STATA Companion to Political Analysis, 2nd Edition 2011, are the required textbooks for this course and can be purchased in the university bookstore or online. Additional readings will be made available on the course website as necessary throughout the semester. The course will use the statistical software STATA 12, which is available for free on the lab computers in Eaton 208. Students can purchase individual copies by going to <http://www.stata.com/order/new/edu/gradplans/us-pickup/>

A six month license can be purchased for \$65.00.

Course Website

A website for each section has been developed for this class that will provide student access to general course information, handouts, supplemental readings, homework sets, datasets, and other materials throughout the semester. It can be accessed from <http://trunk.tufts.edu>. Follow the instructions on the website for Tufts students to obtain your username and password.

Grading Policy

Please be aware that you need to obtain a grade of B- or better in order to successfully complete this quantitative core course as required by the UEP MA and MPP programs. Grades will be based on three problem sets, two papers (4 to 5 pages each) and class participation and attendance. The problem sets must be submitted as a hardcopy in class on the day in which they are due (without exception). The papers can be submitted electronically via Trunk.

Class Attendance

Students are expected to attend each class during the semester and are expected to notify their professor prior to class if he or she needs to miss a class. Students will be downgraded by one grade level (e.g., A to A-) once 3 or more classes are missed without notifying their professor and determining a plan for learning the material presented during class.

Grade Distribution

	% of Grade
Problem Sets	(5%*3) 15%
Paper #1 (midterm)	30%
Paper #2 (final)	40%
Class participation and attendance	15%
Total	100%

Course Schedule (subject to change or modification as needed)

Week	Date	Topic	Reading	Assignments
1	Sept. 3 (T) Sept. 5 (Th)	Introduction to Course Review Data Sets: Questions and Codes		
2	Sept. 10 (T) Sept. 12 (Th)	Measurement: From Construct to Empirical Data Reliability and Validity	Chapter 1	
3	Sept. 17 (T) Sept. 19 (Th)	Levels of Measurement Measures of Central Tendency and Dispersion Describing a sample or population	Chapter 2	Sept 17th – Problem Set #1 posted on Trunk
4	Sept. 24 (T) Sept. 26 (Th)	Developing Hypotheses Population Parameters and Sample Statistics	Chapters 3-4	Problem Set #1 – due Sept 24th or 26th in class
5	Oct. 1 (T) Oct. 3 (Th)	Normal Distribution and Central Limit Theorem Hypothesis Testing and One	Chapter 6	Oct 1 st – Problem Set #2 posted on Trunk

		Sample T-test		
6	Oct. 8 (T) Oct. 10 (Th)	Overview of Statistical Tests T-tests	Chapter 7 (pp. 145 to 154 3 rd ed., 155-162 4 th ed.); articles on Trunk	Problem Set #2 – due Oct 8 th or 10 th
	Oct. 15 (T)	No Class, Monday Schedule		
7	Oct. 17 (Th) Oct. 22 (T)	Chi-Square	Chapter 5 (pp. 94 to 104 3 rd edition, 102-112 4 th ed.), Chapter 7 (pp. 154-159 3 rd ed., 164-169 4 th ed.); Chapter 11 from supplemental text; articles on Trunk	
8	Oct. 24 (Th) Oct. 29 (T)	One-Way and Two-Way ANOVA	Chapter 14 from supplemental text; articles on Trunk	Paper #1 - due by October 29 th
9	Oct. 31 (Th) Nov. 5 (T)	Correlation and Simple Regression	Chapter 8 (pp. 170 to 187 3 rd ed., 182-199 4 th ed.)	Oct. 31 st - Problem Set #3 posted on Trunk
10	Nov. 7 (Th) Nov. 12 (T)	Multiple Regression	Chapter 8 (pp. 187 to 194 3 rd , ed., 199-206 4 th ed.); articles on Trunk	Problem Set #3 due Nov 7 th or Nov 12 th
11	Nov. 14 (Th) Nov. 19 (T)	Logistic Regression	Chapter 9	
12	Nov. 21 (Th) Nov. 26 (T)	Review and Paper consultations Student Presentations		
	Nov. 28 (Th)	No Class, Thanksgiving		
13	Dec. 3 (T) Dec. 5 (Th)	Student Presentations Course Evaluation		Paper #2 – due by Dec 9 th

List of Articles to Choose From (all on Trunk)

T-Tests:

- Kuo & Sullivan (t-test)
- Domina & Koch
- Collins & Chambers

Chi-Square:

- Keane
- Kneeshaw
- Larson

Oneway ANOVA:

- Jambunthan & Burts
- Ewart & Baker
- Carlopio

Multiple Regression:

- Rohe & Basolo
- Gatersleben, et al
- Kuo & Sullivan (reg)

Logistic Regression:

- Keane
- Larson

Supplemental Text – Chapters on Trunk

Frankfort-Nachmias, C., & Leon-Guerrero, A. (2009). *Social statistics for a diverse society* (5th edition). Los Angeles: Pine Forge Press.

Papers

Two papers will be required; the first serving as the midterm and the second serving as the final. Briefly, the purpose of Paper #1 is to develop, test, and report the results of a series of four related null hypotheses utilizing the GSS2006 or NES2008 data set. These hypotheses will be tested using either a chi-square or t-test. The purpose of paper #2 is to select a sample from the GSS2006 or NES2008 data set and develop your own regression model to test hypotheses about the predictors of a selected dependent variable. More detail about each paper and the specific requirements for each will be posted on Trunk.

Lab Sessions

Lab sessions will be run by the TAs and will be held on Wednesdays from 4:30-6:00 pm and Fridays from 12:00-2:30 pm in the Eaton computer lab room 208. The lab sessions are optional but they will provide students with support and instruction for learning STATA and for developing the skills necessary to complete the problem sets and papers. Lab sessions will use exercises in the workbook, [A](#)

STATA Companion to Political Analysis. Answers to the lab session exercises will be posted on the Wednesday after each lab session. The lab schedule and tasks are as follows:

September 4th/6th

- Copy the four datasets on trunk (gss2006.dta, nes2008.dta, states.dta, and world.dta) to your user area;
- Complete exercises 1-4 (p. 13) in Chp 1; repeat exercises 1-4 using the data set gss2006 and the variable attend

September 11th/13th

- Complete exercise 2 (pp. 34-36) in Chp 2 using gss06
- Complete exercise 5 (pp. 38-39) in Chp 2 using women09

September 18th/20st – work on problem set 1

September 25th/27th

- Complete exercise 1 (pp. 54-55) in Chp 3 using gss06
- Complete exercise 8 (p. 82) in Chp 4 using gss06
- Complete exercise 9 (p. 83) in Chp 4 using gss06

October 2nd/4th – work on problem set 2

October 9th/11th

- Review exercise 5 from problem set 2. Recode polyview into two categories (liberal vs conservative; make moderate missing) and run a t-test comparing the mean score on fem_role between liberals and conservatives. State a null hypothesis and assess the results of the t-test to retain or reject the null hypothesis.
- Use the same recoded polyview variable and run a t-test comparing the mean score on feminist_therm between liberals and conservatives. State a null hypothesis and assess the results of the t-test to retain or reject the null hypothesis.

October 16th/18th

- Begin work on Paper #1 – t-test hypotheses and analyses

October 23th/25th

- Re-run exercise 2 from problem set 2 and ask for a chi-square test. State a null hypothesis and assess the results of the chi square test to retain or reject the null hypothesis.
- Work on paper #1 – finish t-tests; work on chi-square tests

October 30th /November 1st

- Review exercise 5 from problem set 2. Recode polyview into three categories (liberal, moderate, conservative). Run a series of one-way ANOVAs (with post hoc tests) on the following dependent variables: policy_know, racial_liberal, social_cons, and spend6. State a null hypothesis for each analysis and assess the results of each anova.

November 6th/8th – work on problem set 3

November 13th/15th

- Complete exercise 6, parts A and B (pp. 171-172) in Chp 8 using gss06.
- Recode education into a dummy variable. You can choose how to do the recode. For example, you might recode into groups comparing 12 years of school or less to more than 12 years, 16 years of school or less to more than 16 years, etc. Re-run the regression model in exercise 6 replacing educ with your dummy variable. Do the results change? If so, how?

November 20th/22nd – work on paper #2

November 27th/29th – Thanksgiving – no Lab.

December 4th/6th – work on paper #2