Quantitative Political Methodology
L32 363

montgomery.wustl.edu/ps363.html

LECTURE	LABS
Monday and Wednesday	Thursday or Friday (Misc.)
11:00 – 12:00	Applied Statistics Classroom
Seigle Hall 304	Seigle Hall L016

Instructor Information

Jacob M. Montgomery, Ph.D.
Assistant Professor, Department of Political Science
Office: Seigle 242
E-mail: jacob.montgomery@wustl.edu
Telephone: (314) 935-9106
Office Hours: Tues. 9:30-10:30, Wed. 2:00-3:00, and by appointment

Textbook

Alan Angresti and Barbara Finlay. 2009. *Statistical Methods for the Social Sciences, Fourth Edition*. Upper Saddle River, NJ: Prentice Hall. ISBN: 978-0130272959

Course Description

What is the probability that there will be a war between Sudan and the newly created Republic of South Sudan next year? How likely is it that Justice Sotomayor will vote to grant cert in a First Amendment case? How strong is the relationship between holding pro-life beliefs and voting for the Republican presidential candidate? Do domestic political institutions systematically impact currency markets, and how big is their effect? The use of quantitative methods allows political scientists to answer these types of questions.

This course is an introduction to research methodology and quantitative analysis for social scientists. Students will be introduced to the logic of social scientific inquiry and to the basic statistical tools used to study politics. Students will learn and apply the following to answer substantive questions: measurement, descriptive analysis, correlation, graphical analysis, hypothesis testing, confidence intervals, and regression analysis. Major components of the course include learning how to collect, manage, and analyze data using computer software, and how to effectively communicate results to others.

Although students will certainly be expected to engage with mathematics, formulas, and data analysis, the goals of the class are primarily conceptual rather than narrowly mathematical. The course will focus on helping students to understand the core concepts behind statistical tests, understand their uses (and limitations), learn to apply them appropriately to substantive problems of interest, and learn how to communicate findings to others.

Requirements and Evaluation

The requirements for this course are simple:

- Do the readings *before* the class.
- Complete assignments on time.
- Attend class and labs.
- Sit for the three exams.

The twice-a-week lectures will focus primarily on substantive issues as well as the statistical issues covered in the readings. The lab sessions will serve as a software tutorial, as well as a seminar-like setting where students can discuss research design. Lab instructors will also introduce new statistical material covered in the text but not in the lecture. Expect to leave the lab session each week with the ability to implement the analyses we covered in the lecture and a good understanding of why you would want to do them.

Students will be evaluated on homework assignments and three examinations. Final grades will be calculated based on the following five components.

- Lab session attendance – 10%
- Homework (About 11 total assignments. The lowest homework grade will be dropped when computing each student's score) – 20%
- Exam #1 (See schedule) – 15%
- Exam #2 (See schedule) – 20%
- Final Exam – 35%

Students will have weekly homework assignments that will be made available to them on Mondays on the course website. Unless there is a prior announcement, these assignments will be due in class on the following Monday. Homeworks will be returned to students no later than the following Monday, and an answer key will also be distributed. There will be two mid-term exams (as noted on the schedule). As this is largely a mathematical course, all exams are implicitly cumulative. The course is graded on the 10 point scale below.

Score	Grade	Score	Grade	Score	Grade	Score	Grade
$\geq$94	A	$\geq$83	B	$\geq$ 73	C	$\geq$63	D
$\geq$90	A-	$\geq$80	B-	$\geq$ 70	C-	$\geq$60	D-
$\geq$87	B+	$\geq$77	C+	$\geq$ 67	D+	$<$60	Fail

Late assignments will *not* be accepted and no incompletes will be given for assignments, exams, or the course. Exceptions will be granted only under truly extraordinary circumstances. Failure to meet the requirements of the course will result in a failing grade. If a student needs to miss an examination or requires special accommodations, prior arrangements should be made with Professor Montgomery at least two weeks in advance.

Academic Honesty

Cheating and plagiarism will not be tolerated. I strongly encourage you to review the University's policies regarding academic honesty, which you can read at: `http://www.wustl.edu/policies/undergraduate-academic-integrity.html`.

In general, if you have any question, please feel free to ask your TA or Professor Montgomery. Specific rules for this course:

- You may work together on homework in small groups, but you should each prepare your answers separately.
- The homeworks are "open book" and "open notes."
- Your are to consult *only* with Professor Montgomery or your TA during exams.
- You will be allowed to bring one sheet of paper to exams to consult. This may be filled (front and back) with any equations or notes you may find helpful. Otherwise the exams will be "closed book."

Teaching Assistants

There are two graduate teaching assistants assigned to this course. Both teaching assistants concentrate in social science or applied statistics and have vast experience in applied quantitative analysis. They will each hold office hours.

Graduate TA
Ms. Adriana Crespo-Tenorio
Email: acrespot@wustl.edu
Office Hours: Fri. 2:00-3:30

Graduate TA
Ms. Constanza F. Schibber
Email: cfiguero@wustl.edu
Office Hours: Thurs. 4:00-5:30

Each laboratory session will be led by one of the teaching assistants. Most grading will be done by the graduate TAs; some will be done by Professor Montgomery. You should meet with the graduate TAs with any concerns about evaluation. I am happy to meet with students about grading issues only after they have met with the graduate TAs. The graduate teaching assistants will work closely in conjunction with Professor Montgomery on all issues of grading and student evaluation. I encourage you to get to know the teaching assistant responsible for your lab.

Software

In the lab sessions and to complete your homework assignment, you will be using the R statistical package (`http://www.r-project.org/`). This package is widely used in political science, economics, psychology, sociology, and biostatistics. R is available for every computing platform, and most importantly, is free. As such, you need to rely on computer labs to complete your assignments. Please feel free to contact Professor Montgomery or a TA if you have any questions about software. Please bring your laptops to the first lab session for help installing the program.

Tentative Lecture Schedule

Date	Topic	Reading Assignment	
8/31	Introduction		
9/5	NO CLASS (Labor Day)		
9/7	Data types & Randomization	1.1-1.4, 2.1 - 2.2	
9/12	Sampling & Data visualization	2.3-2.4, 3.1	(HW #1 due)
9/14	Descriptive statistics	3.2-3.4, 3.6-3.7	
9/19	Probability	4.1-4.3	(HW #2 due)
9/21	Sampling distributions	4.4-4.7	
9/26	Estimation 1	5.1, 5.3	(HW #3 due)
9/28	Estimation 2	5.2	
10/3	Sampling size & Exam review*	5.4	(HW#4 due)
10/5	Exam #1		
10/10	Hypothesis testing	6.1-6.3	
10/12	Type I & Type II errors	6.4-6.5	
10/17	Comparing means	7.1, 7.3, 7.4, 12.1	(HW #5 due)
10/19	Comparing proportions	7.2, 6.7, 7.6	
10/24	Contingency tables	8.1-8.4	(HW #6 due)
10/26	Examples*	Readings TBA	
10/31	Exam review*		(HW #7 due)
11/2	Exam #2		
11/7	Linear regression 1	3.5, 9.1-9.2	
11/9	Linear regression 2 (this time with more math)	9.3-9.4	
11/14	Interpreting slopes & Errors in errors	9.5, 9.6-9.8	(HW #8 due)
11/16	Multivariate regression 1	10.1-10.5	
11/21	Super-secret exam review		(HW #9 due)
11/23	NO CLASS (Thanksgiving break)		
11/28	Multivariate regression 2	11.1, 11.2	(HW #10 due)
11/30	Multivariate regression 3	11.3, 11.4	
12/5	Interactions & Examples*	11.5	(HW #11 due)
12/7	Exam review*		
12/20	Final Exam	1:00 – 3:00 PM	

* Graduate TAs will provide portions of the lectures on these days