

# [POLS 4150] Quantitative Methods in Political Science

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Office Hours: Tuesday, 2:30–3:30  
414 Baldwin Hall (or by appointment)

Class: 12:30–1:45pm Tu, Thu,  
53 Fine Arts Building

## Prerequisites

No prerequisites are assumed for the class other than a basic understanding of algebra and ability to use a computer. It would be helpful to have taken an introductory class in statistics at some point, but we will fill in many of the gaps for those that have no background in statistics.

## Course Overview and Objectives

This course will provide an introduction to research methods in political science and applied politics. By the end of this course, you should be able to effectively critique (and be skeptical of) every study that you read in the news; understand basic statistics, experiments and causality and gain an appreciation for the importance of statistics and data in modern politics.

The goals of this course include:

- Learning the basic statistical skills necessary to conduct and analyze research on politics.
- Develop basic programming skills in the R statistical language that will enable you to analyze data and conduct research on your own.
- Conduct your own quantitative analysis of a political issue that you are interested in.

## Required Texts

Agresti and Findlay. 2008. *Statistical Methods for the Social Sciences (4th Edition)*. Referred to in the schedule as **AF**. I recommend [renting this book from Amazon](#).

Monogan III, James E. 2015. *Political Analysis Using R*, Springer. <http://link.springer.com/book/10.1007%2F978-3-319-23446-5>. **Referred to in the schedule as M3**

In addition to these books assigned readings will be available here: <http://scholar.harvard.edu/janastas/teaching> or as links in the course syllabus.

## Attendance and Participation

The most important content from this class will come from the lectures and group assignments during lecture time. Because of this and the technical nature of this class, attendance and participation in class is extremely important. If you cannot attend a lecture you must present me with a valid excuse at least 24 hours prior to the start of class unless the situation you encountered was an emergency. Either way, absence requires explanation and documentation if you do not want want points taken off of your final grade.

## Computer, Tablet and Cell Phone Use Policy

Laptop computers and tablets may be used during class sessions for note taking ONLY. ANY instance of unapproved use of laptop computers or tablets in the classroom will result in your laptop/tablet privileges being revoked for the remainder of the semester. Cell phones and other electronic devices must remain off and stored out of sight at all times during class.

## Academic Honesty and Integrity

As a University of Georgia student, you have agreed to abide by the [University's academic honesty policy](#), "A Culture of Honesty," and the Student Honor Code. All academic work must meet the standards described in "A Culture of Honesty" found at: [www.uga.edu/honesty](http://www.uga.edu/honesty). Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. Questions related to course assignments and the academic honesty policy should be directed to the instructor.

## Special Accommodations

Students with disabilities who require reasonable accommodations in order to participate in course activities or meet course requirements should contact the instructor and work with the Disability Resource Center (<http://drc.uga.edu/students/register-for-services> ) to develop an accommodation plan. The student is responsible for providing a copy of that plan to the instructor.

Make-up exams and Incomplete or “I” grades are permitted in only extremely rare circumstances. The instructor has the right to (1) require documentation and proof of the need for the make-up exam or “I” grade (2) require the completion of different versions of assignments missed and/or (3) impose a grade penalty for a missed exam or Incomplete grade in the course. Please let the instructor know as soon as you see a problem developing. Any students wishing to withdraw from the course must follow the University’s course withdrawal procedures.

## Exams and Problem Sets

There will be one midterm examination and a total of five problem sets during the semester covering materials discussed in lectures and in the readings.

Students who cannot be in class on the scheduled dates in which examination is to be completed must meet with the instructor prior to the date in question. Failure to do so will result in a failing grade for the exam.

The format of problem set assignments will vary and will involve math, programming, software manipulation and basic logic. Unless specifically noted on the problem set, these are **individual** assignments so students will need to show independent work. More information about each assignment will be provided in class the week before it is due.

## Course Project

Working in groups or individually, students will propose a course project which uses data to explore an issue in current politics or in political science research. You will be asked to put together a course project proposal halfway through the academic year and the final course project will be due at the end of the semester.

The final course project will contain two components:

- (1) A presentation that will be presented during the last week of class on April 20th and April 25th, 2017;
- (2) A paper which will be handed in for a grade.

## Grades

Attendance and participation	10%
Problem Sets	20%
Midterm Exam	25%
Course Project Proposal	10%
Course Project Presentation	10%
Course Project Paper	25%

## Tentative Schedule

### 01.05 Course Overview

### 01.10 Introduction to R and data for political research

**M3** - pp 1-31.

**AF** - Chapter 1.

*Application:* Variables and the 2016 U.S. presidential election.

### 01.12 Variables, randomization and sampling

**AF** Chapter 2.

*Application:* Why will political polls come to different conclusions?

### 01.17 Describing and Summarizing Data

**AF** Chapter 3.

**M3** Chapter 3.1-3.2, 4.1.

*Application:* The average American voter: Democrats, Republicans and Independents.

### 01.19 Introduction to Probability, Discrete and Continuous Probability Distributions

Problem set 1 handed out.

**AF** Chapter 4.1-4.3.

**M3** Chapter 11.1.

*Application:* Income inequality in the U.S.

### 01.24 Sampling Distributions

**AF** Chapter 4.4-4.6.

### 01.26 Statistical Inference: Point estimation

Problem Set 1 due.

**AF** Chapter 5.1.

*Application:* Presidential approval ratings.

### 01.31 Statistical Inference: Confidence intervals

**AF** Chapter 5.2-5.4.

*Application:* Opinions about political correctness (Pew Poll).  
Methodology

### 02.02 Statistical Inference: Significance tests

**AF** Chapter 6.1-6.3.

**M3** Chapter 5.1.1

*Application:* [Are half of Americans Protestants?](#)

**02.07 Statistical Inference: Decision theory, Type I and Type II errors**

**AF** Chapter 6.1-6.3.

*Application:* Should we care more about false positives or false negatives?

**02.09 Two group comparisons - means and proportions**

Problem set 2 handed out.

**AF** Chapter 7.1-7.3.

*Application:* [Are young people more likely to live at home now than over the past 100 years?](#)

**02.14 Two group comparisons - means with dependent samples, non-parametric methods**

**AF** Chapter 7.4-7.7.

**M3** Chapter 5.1.2.

*Application:* [Is political polarization increasing?](#)

**02.16 Relationships between categorical variables**

Problem set 2 due.

**AF** Chapters 8.1-8.3.

**02.21 Statistical Inference: Decision theory, Type I and Type II errors**

Problem set 3 handed out.

**AF** Chapters 6.1-6.3.

*Application:* Should we be more concerned about false positives or false negatives?

**02.23 Introduction to observational studies, experiments and causality I**

Putnam, R.D., 2007. [E pluribus unum: Diversity and community in the twentyfirst century the 2006 Johan Skytte Prize Lecture](#). Scandinavian political studies, 30(2), pp.137-174.

Pape, R.A., 2003. [The strategic logic of suicide terrorism](#). American political science review, 97(03), pp.343-361.

**02.28 Introduction to observational studies, experiments and causality II**

Gerber, A.S., Green, D.P. and Larimer, C.W., 2008. [Social pressure and voter turnout: Evidence from a large-scale field experiment](#). *American Political Science Review*, 102(01), pp.33-48.

Anastasopoulos, L. 2016. [Geographic Context as a Treatment: An Experiment on the Policy Effects of Immigrant Skin Tone](#).

03.02 **Midterm Exam**

03.07 Spring break, no class.

03.09 Spring break, no class.

03.14 **Intro to linear regression and correlation**

**AF** Chapter 9.1-9.3.

**M3** Chapters 5.3, 6.1.

*Application:* [Guns and crime](#).

03.16 **Linear regression and statistical inference**

**AF** Chapter 9.4-9.7.

*Application:* [Partisanship and political knowledge](#).

03.21 **Multivariate relationships**

Problem set 4 handed out.

**AF** Chapter 10.1-10.4.

03.23 **Multiple regression model**

**AF** Chapter 11.1-11.3.

03.28 **Multiple regression inference**

Problem set 4 due.

**AF** Chapter 11.4-11.6.

**M3** Chapter 6.2.

03.30 **Logistic regression**

**AF** Chapter 15.1-15.3.

**M3** Chapter 7.1.1.

04.04 **Special Topics: Causal inference, regression discontinuity designs**

Problem set 5 handed out.

Anastasopoulos, L.J. 2016 “Womens lack of representation in the House is not down to discrimination from voters or campaign donors.”

**04.06 Special Topics: Intro to machine learning**

A visual introduction to machine learning.

An Introduction to Machine Learning Theory and Its Applications:  
A Visual Tutorial with Examples

**04.11 Special Topics: Text as data**

Problem set 5 due.

Readings TBA

**04.13 Special Topics: Machine learning with text data.**

Readings TBA

**04.18 Special Topics: Machine learning and analyzing political texts**

Problem set 5 due.

Readings TBA

**04.20 Final project presentations I**

**04.25 Final project presentations II**

**05.02 No class. Final papers due**