POLS 5013: Quantitative Methods of Political Analysis

Spring 2010

Last Updated: December 22, 2009

Professor Peter Rudloff

Class Location: Murray Hall 232   Class Time: W 4:30 pm - 7:10 pm

Office Location: Murray Hall 205   Office Hours: 9:30 am - 12:30 pm Monday, Wednesday
Course Website: https://oc.okstate.edu/   Email: peter.rudloff@okstate.edu

This class is an introduction to statistical methods in political science. Although we will focus on the analysis of political problems, the methods learned here can be applied to a variety of topics, including a variety of social sciences. The topics covered include basic issues of data management, descriptive statistics, constructing plots and graphs, as well as more advanced methods such as multivariate regression analysis. The emphasis in this course is on application rather than statistical theory. In this course, you will learn:

- . . . how to select the appropriate statistical method for a given topic and research design

- . . . how to utilize various statistical methods to reach conclusions about research questions

- . . . how to interpret statistical analysis found in social science journals

- . . . how to conduct various types of statistical analyses, including difference of means tests and regression analyses

- . . . how to construct graphics and plots that are useful to both the researcher and the reader

- . . . the weaknesses and limitations of quantitative data and statistical methods

Course Materials

There are two required textbooks for this course:

- Acock, Alan C. 2008. *A Gentle Introduction to Stata*. Second edition. College Station, TX: Stata Press.

- Berry, William D. and Mitchell S. Sanders. 2000. *Understanding Multivariate Research: A Primer for Beginning Social Scientists*. Boulder, CO: Westview Press.

- Fielding, Jane and Nigel Gilbert. 2006. *Understanding Social Statistics*. Second edition. London: Sage.

A majority of the readings will be from these three textbooks (see the schedule at the end of this syllabus), however, throughout the semester I will assign readings from other books and journals. These readings may be on reserve at the library (click on the "Search Course Reserves" link on the library's website at `http://www.library.okstate.edu`), and can be accessed electronically. Readings that are not on course reserve can be accessed through the library's website by following the "Full-Text Journals" link on the library's website at `http://www.library.okstate.edu`.

Course Grade

The course grade consists of three component parts: exams, quizzes, and a writing assignment. The details of each of these graded components are summarized in the table below (note that the assignments are organized by due date in ascending order).

Assignment	Due Date	% of Final Course Grade	# of Possible Points
Quiz One*	February 3, 2010	10%	10 points
Quiz Two*	February 17, 2010	10%	10 points
Quiz Three*	March 3, 2010	10%	10 points
Midterm Exam	March 10, 2010	18%	18 points
Quiz Four*	March 31, 2010	10%	10 points
Quiz Five*	April 7, 2010	10%	10 points
Quiz Six*	April 21, 2010	10%	10 points
Writing Assignment	April 21, 2010	14%	14 points
Final Exam	May 5, 2010	18%	18 points
Totals		**100%**	**100 Points**

* Note there are six quizzes, but that only five of the quiz grades will be included in the final grade. See the detailed explanation of the quizzes below.

The final course grade is determined by adding up the number of points earned for each assignment and comparing this total number of points to the grading scale summarized in the table below.

Point Range	Final Course Letter Grade
89.99 - 100	A
79.99 - 89.98	B
69.99 - 79.98	C
59.99 - 69.98	D
0 - 59.98	F

Each of the components of the course grade are detailed below.

Exams There will be two exams during the course of the semester. The midterm exam will be administered on March 10, 2010 during the regular class period, and is worth 18 possible points. The final exam will be administered on May 5, 2010 from 6:00 pm - 7:50 pm, and is worth 18 possible points. Each exam will consist of a number of questions that can either be answered with a couple of short paragraphs, output from statistical software, or a small amount of math.

Writing Assignment A single writing assignment is due on April 21, 2010 **at the beginning of the class period**. The writing assignment will be handed out in March. The focus of the writing assignment is to develop a hypothesis that is empirically testable using the methods detailed in class, conduct this analysis, and present the analysis in written form similar to what you would find in a journal article. The writing assignment is worth a possible 14 points, or 14% of the final course grade.

Quizzes Six quizzes will be administered throughout the semester. These quizzes will consist of a combination of multiple choice questions from the readings and lecture, as well as a computer based component that focuses on applying various skills and methods from class to data. You will receive more information on the quizzes as the due dates approach. The quiz schedule is summarized below:

Quiz	Due Date
Quiz One	February 3, 2010
Quiz Two	February 17, 2010
Quiz Three	March 3, 2010
Quiz Four	March 31, 2010
Quiz Five	April 7, 2010
Quiz Six	April 21, 2010

Each quiz will be handed out in class the week before the due date. Each quiz is due at the beginning of the class period on the above due date. Note that most of the quizzes will require you to turn in output from statistical software, and therefore all quizzes will be turned in through the "Drop Box" feature on the course website. Failure to submit a quiz by the beginning of class (i.e. 4:30 pm) on the due date results in a grade of 0 for the quiz.

Course Policies

Access to Statistical Software There are three ways to access the statistical software used in the course. 1) The Department of Political Science maintains a number of laptop computers, each of which contains statistical software relevant for the class (and required for completing the quizzes and assignments). These computers are available between 9:00 am and 4:30 pm in the department's main office located in Murray Hall 201. Note that these laptops are available for "check-out" during the day, and will be used in class as well (see the schedule later in the syllabus). One restriction associated with the laptops is that they must remain in the building. 2) I set up a "GradPlan"[1] that allows you to purchase the statistical software at a discount. Participation in this program lasts for the length of the course, and requires a course-specific code. I will provide more information on this option the first day of class. 3) The statistical software has recently been installed on the university's "Virtual Labs"[2]. This option allows you to use the software over an internet connection, and is available to all university students.

Meeting with Students I encourage all students to utilize office hours to discuss the course. If you are unable to utilize office hours due to a scheduling conflict, I will attempt to make arrangements to meet with you at times other than regularly scheduled office hours. If you would like to schedule a meeting, send me an email with some times that you are available between 8:00am and 4:00pm, Monday through Friday. I will attempt to accommodate.

Honors Credit I am willing to work with students who wish to take the course for honors credit (more information on the procedures for doing so can be found at `http://www.okstate.edu/honors/`). In addition to an "Honors Contract" (see `http://www.okstate.edu/honors/contracts.html`), I require that students commit (in writing) to regular meetings with myself and intermediary deadlines for any assignments and/or projects associated with receiving honors credit for the course. If students fail to attend these meetings or meet these intermediary deadlines, the student will not receive honors credit for the course. This policy is meant to help students complete these assignments and/or projects in a timely manner and to prevent undue stress at the end of the semester.

Writing Assignment Late Penalties Writing assignments that are turned in late result in a 10% reduction in the maximum possible score of the writing assignment for each 24-hour period that the writing assignment is late, rounded down to a positive integer. **The writing assignments are due at the beginning of the class period on the due date** (see the "Course Requirements" section of the syllabus for more information on when writing assignment is due). For example, if a student turns in the writing assignment on April 23, 2010 at 8:00 pm, then the highest possible grade on the writing assignment is 70% of the 14 points possible, or 9 points possible (i.e. $14 \times 0.7 = 9.8$, rounded down to 9). Note that each ten percent represents most of a full letter grade, so it is vital to turn in the draft version of each writing assignment on time.

Academic Integrity Oklahoma State University maintains a detailed policy regarding academic integrity, which can be found at `http://academicintegrity.okstate.edu/`. Note that the least severe penalty suggested in this policy is a 0 for the assignment where an academic integrity violation is found. In cases of academic dishonesty, I reserve the right to determine

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[1]See `http://www.stata.com/order/new/edu/gradplan.html`.
[2]See `http://it.okstate.edu/itprojects/vlabs.php`

the whether a case of academic dishonesty warrants a penalty on the assignment that is less severe than a 0 on the assignment. **Such penalties may include, but are not limited to a deduction of points from the assignment (up to a 0 on the assignment), and/or the completion of an additional assignment.** I will base this determination on the extent of the academic dishonesty on a case-by-case basis. If I determine that the academic dishonesty warrants a stronger response, I will adhere to the procedures detailed in Oklahoma State University's academic integrity policy (at `http://academicintegrity.okstate.edu/`). Either when determining the extent of any academic dishonesty, any resulting penalty, or whether to follow Oklahoma State University's academic integrity policy, **the initial determination is strictly my own.** I will meet with the student to discuss any case of academic dishonesty, and the student can indicate at this meeting if they prefer to follow the procedures detailed in Oklahoma State University's academic integrity policy (at `http://academicintegrity.okstate.edu/`).

Disruptive Behavior Do not engage in behavior that potentially disrupts other students or the instructor. Such behavior may include, but is not limited to, talking with other students during lecture, reading materials from other classes, using a laptop to access the internet for recreation during class, etc. If such behavior becomes an issue, the student will be removed from class. **Turn off all cellular phones and pagers during class**.

Course Website I maintain a course website through Oklahoma State University's "Online Classroom" (at `https://oc.okstate.edu/`). This website includes information regarding the course, including the written assignments and important announcements. Each student is responsible for checking the course website frequently for announcements and to retrieve any assignment on the course website in a timely manner. The instructor is not responsible for any technical difficulties encountered when accessing the course website. If you encounter such difficulties, there is a "Student Help" link located at `https://oc.okstate.edu/`. Technical difficulties with the course website do not serve as an excuse for late assignments.

University Policies and Information The last two pages of the this syllabus are a "Syllabus Attachment" that summarize various university deadlines and policies. Be sure that you read and understand the syllabus attachment.

Email and Grades Students may retrieve grades in three ways: 1) grades are posted on returned assignments, 2) grades are posted on the course website's "Grade Book", and 3) I will reveal grades directly to the student in office hours. I will not reveal grades via email.

Syllabus Changes I reserve the right to change the syllabus during the semester. Such changes may include the addition of new readings, new policies, etc. If I make a change to the syllabus I will make an announcement regarding the change in class and on the course website.

Course Schedule and Topics

Below is a chronological list of the topics to be discussed in the course, along with required readings and the due dates for assignments. The centered headings represent the overall organization of the material. The required readings do not appear in any particular order. All required readings listed for a particular day should be read by ***the beginning of the class period on that given day***. If a range of days are given, the readings should be completed by ***the beginning of the class period on the first day given***.

Introduction

January 13, 2010 Introduction to Quantitative Methods, Introduction to Stata

Data Management

January 20, 2010 Importing Data

> **Required Readings** Acock (2008), Chapters 1–2

January 27, 2010 Transforming Data, .log Files, Browsing Data, Saving Data

> **Required Readings** Fielding and Gilbert (2006), Chapter 1; Acock (2008), Chapters 3–4

February 3, 2010 .do Files, Merging Data

Descriptive Statistics

February 10, 2010 Describing Variables, Central Tendency, Variability

> **Required Readings** Fielding and Gilbert (2006), Chapters 3–5; Acock (2008), Chapter 5

February 17, 2010 Distributions, Cross-Tabulations

> **Required Readings** Fielding and Gilbert (2006), Chapter 7

Graphics I

February 24, 2010 Histograms, Scatterplots

> **Required Readings** Fielding and Gilbert (2006), Chapter 4

Introduction to Testing Hypotheses

March 3, 2010 Difference in Means Testing, χ^2 Tests

> **Required Readings** Acock (2008), Chapters 6–7

March 10, 2010 Midterm Exam

Bivariate Relationships

March 24, 2010 Correlations

> **Required Readings** Fielding and Gilbert (2006), Chapter 8

Bivariate Regression Analysis

March 31, 2010 Bivariate Regression, Residuals, R^2

> **Required Readings** Berry and Sanders (2000), Chapters 1–2; Acock (2008), Chapter 8

Multivariate Regression Analysis

April 7, 2010 Multivariate Regression

> **Required Readings** Berry and Sanders (2000), Chapter 3; Acock (2008), Chapter 10

April 14, 2010 Multicollinearity, Heteroskedasticity

> **Required Readings** Berry and Sanders (2000), Chapters 4–5

Graphics II

April 21, 2010 Residual Plots, Plotting Multiple Relationships

> **Required Readings** Fielding and Gilbert (2006), Chapter 6

Introduction to More Advanced Methods

April 28, 2010 Non-Continuous Dependent Variables, Temporal Data

> **Required Readings** Acock (2008), Chapter 11

May 5, 2010 Final Exam, 6:00 pm - 7:50 pm

References

- Acock, Alan C. 2008. *A Gentle Introduction to Stata*. Second edition. College Station, TX: Stata Press.

- Berry, William D. and Mitchell S. Sanders. 2000. *Understanding Multivariate Research: A Primer for Beginning Social Scientists*. Boulder, CO: Westview Press.

- Fielding, Jane and Nigel Gilbert. 2006. *Understanding Social Statistics*. Second edition. London: Sage.