Course: POLS 5153 Quantitative Methods

Class: W 5:30–8:20, PY 209
Lab: PY 126

Lecturer: Steve Garrison, Ph.D.

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Office Hours: 9:00-10:50 MW, 9:30-11:00 & 1:00-2:30 TR, and 4:30-5:30 W, and by appointment

Quantitative Methods POLS 5153: This course is designed to prepare you for the application of quantitative methods in your masters research. Topics will include graphic methods, data management, multivariate regression and diagnostics, and logistic regression and diagnostics. Upon completion of this course students should be able to determine the appropriate quantitative method for use in their research and apply to their research project.

Course Objectives: This course is intended to further student development in the following departmental learning objectives.

- Display critical thinking skills concerning theoretical explanations of local, state, national, and global political processes.
- Demonstrate critical thinking skills towards political research concerning the strengths and weaknesses of various methods of inquiry.
- Evaluate the appropriateness of rival political explanations to current political issues.
• Construct an appropriate research question and design.
• Develop a theoretical explanation and resulting hypotheses.
• Collect, analyze, and interpret data using relevant statistical methods.
• Present research findings in a professional manner consistent with disciplinary norms.
• Demonstrate effective writing skills.
• Display effective oral communication skills.
• Demonstrate an ability to produce professional presentations.

Texts:
*Regression Diagnostics*, John Fox (1991), Sage University Papers.


Additionally there are a series of journal articles that are required reading. I have electronic copies of these and will make them available to the class.

**STATA Applications:** Since the focus of this course is the application of statistical methods in the research process we will devote a significant portion of the class to learning the statistical program STATA. This will require spending some time in the social sciences computing lab in 126 PY. In addition to class time you will also be required to complete several assignments with STATA.
Exercises: Basically each week I expect you to contribute something to class. This will consist of either completion of computer/math exercises, writing assignment, or presentation of reading assignment. This is a master level course and student participation is considered a given. Please be prepared for class. Some of the readings may be challenging this semester. It is ok to not fully comprehend readings, just be prepared, and able to discuss why.

Writing Assignments: A major aspect of successfully applying quantitative methods in the research process is to be able to present your research in a written format. To prepare you for this I will expect you to complete a series of written presentations of quantitative analysis. I will expect a total of 25-30 pages of written text. I will assign five different writing assignments of an expected 6-8 pages in length and students can pick the four assignments that they would like to write on. Specific instructions for these writing assignments will be distributed in class.

Grading:

Exercises 20 points
Writing Assignments 80 points

Disability Policy: Any student in this course who has a disability that may preclude demonstrating fully his or her abilities should contact me as soon as possible. We will discuss the accommodations necessary to ensure full participation and to facilitate education.

Plagiarism: I take plagiarism very seriously and will check your work. By enrolling in this course, the student expressly grants MSU a “limited right” in all intellectual property created by the student for the purpose of this course. The “limited right” shall include but shall not be limited to the right to reproduce the student’s work product in order to verify originality and authenticity, and educational purposes. The University’s minimum penalty for cheating or plagiarism is a failure of assignment. Cheating or plagiarism can lead to expulsion from the university. If you have questions about original work, please consult the Student Handbook Code of Student Conduct section 10.

Calendar The following calendar represents the schedule of readings and topics for the course. The reading assignments are located under the date and topic. The instructor reserves the right to change the schedule.
Course Schedule

August 29: Introduction and Review

- Syllabus

Sept 5: Statistical Inference and STATA Introduction

- Bowen and Weisberg. *Introduction to Data Analysis* Chapter 10 “Statistical Inference”

Sept 12: Data Management and Graphic Display


Sept 19: Introduction to Regression Analysis

- Lewis-Beck Chapter 1 and 2

- Fox Chapter 1

Sept 26: Multivariate Regression Analysis

- Lewis-Beck Chapter 3

- Fox Chapter 2

• Writing assignment one due

Oct 3: Model Fit and Standardized Coefficients


• King, Gary. 1990. “When Not to Use R-squared.” The Political Methodologist 3(2):11-12


Oct 10: Regression Topics: Collinearity and Outlier analysis

• Fox Chapter 3


• Fox Chapter 4


• Writing assignment two due
Oct 17: Regression Topics: Dummy Variables and Interaction Terms


Oct 24:

- No Class

Oct 31: Regression Topics: Data Transformation

- Fox Chapters 5 and 6


- Writing assignment three due

Nov 7: Regression Topics: Data Transformation II

- Fox Chapters 7 and 8

Nov 14: Introduction to Logistic Regression

- Menard Chapters 1 and 2
- Writing assignment four due

Nov 21: Thanksgiving

- No Class

Nov 28: Logistic Regression Topics

- Menard Chapter 3

Dec 5: Logistic Regression Topics

- Menard Chapter 4
• Fearon James, David Laitin. 2003. “Ethnicity, Insurgency, and Civil War.” *American Political Science Review*


Dec 12: 5:45 p.m.

• All writing assignments due