Quantitative Political Analysis
PLSC 309
Health and Human Development 350 - Willard Building 069
MoWeFr - 10:10am-11:00am

Instructor Information

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Pond Lab 303
Office Hours: Monday 1:30pm-4:30pm

Course Description

This course introduces you to quantitative tools of data analysis used in political science research. The goals of the course are twofold. First, by the end of the class, you will be able to understand and evaluate empirical research. Second, you will learn how to collect, analyze, and interpret data as well as how to present their conclusions. The lectures will provide you with core concepts and theoretical foundations of quantitative analysis. The course will also include lab time to apply these concepts to research questions using computer software.

Textbook

The following textbook is required reading for the class.

Agresti Alan. 2018. *Statistical Methods for the Social Sciences* (Fifth Edition). Boston: Pearson.

Software

We are going to use the statistical environment R to display and to analyze data in this course. R is free. You can download the software and the manuals at https://www.r-project.org/ RStudio is a tool that facilitates using R. It is available at https://www.rstudio.com/

Requirements and Evaluation

Participation - 20 Points

In order to make sufficient progress in this class, it is essential that you attend all classes and read the assigned material before coming to class. If you miss a class, it is your responsibility to go over the lecture material, and request class notes from your classmates. It is not possible to schedule individual make-up lectures for missed classes. That said, **I strongly encourage you to ask any questions you have about the material during lectures as well as during office hours**.

Participation will be evaluated based on in-class group assignments. I will assign students to groups of four members. I may change the groups throughout the semester. Each group will turn in a single assignment with the name of group members that are present in the class. Only the members of the group that are present in the class will receive credit for the assignment. If you are more than fifteen minutes late to a class, you will not get credit for the in-class assignment for that day. For each student, five lowest assignment grades will be dropped.

Problem Sets - 20 points

There will be 4 problem sets during the semester – each worth 5 points. Answers have to be typed or legibly written, and clearly presented. Paper copies of problem sets will be due at the *beginning* of the class on the dates listed below. If you have issues regarding the printer or if you cannot attend that day's class, please e-mail the pdf file to me *before* the class starts. Any submission after the class will lose 1 point. No assignments will be accepted after the day the assignment is due. You can collaborate on problem sets; however, each student is expected to write his/her own answers.

Exams - 60 points

The midterm exam is on October 17. The final exam will be during the finals week - I will announce the exact date later in the semester. The final exam conflict filing period is September 24 - October 14. Each exam is worth 30 points. Both exams will be "closed-book" but you will be allowed to bring one sheet of paper with your notes. Make-up exams will only be given in cases of health or family emergencies or university-approved events. The requests for make-up exams will only be considered before the exam.

Use of Technology in Classroom

The use of mobile phones is not allowed during lectures unless there is an emergency. The use of computers should be limited to note taking or working on the in-class assignment. Any violation of this policy would result in points deducted from your participation grade.

Extended Absences

During your enrollment at Penn State, unforeseen challenges may arise. If you ever need to miss an extended amount of class in such a circumstance, please notify your professor so you can determine the best course of action to make up missed work. If your situation rises to a level of difficulty you cannot manage on your own with faculty support, reach out to the Student Care & Advocacy office by phone at (814-863-2020) or email them at StudentCare@psu.edu. Office hours are Monday-Friday, 8 a.m. to 5 p.m.

Grading scale

Score	Grade	Score	Grade	Score	Grade
≥94	A	≥83	B	≥ 70	C
≥90	A-	≥80	B-	≥ 60	D
≥87	B+	≥75	C+	< 60	F

Academic Integrity

Students with questions about academic integrity should visit http://www.la.psu.edu/ and then click on "Academic Integrity."

Penn State defines academic integrity as ?the pursuit of scholarly activity in an open, honest and responsible manner? (Senate Policy 49-20). Dishonesty of any kind will not be tolerated in this course. Dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without permission from the instructor, or tampering with the academic work of other students. Students facing allegations of academic misconduct should not drop the course; those who do will be added to the course again and will be expected to complete course work and meet course deadlines. If the allegations are dismissed, then the drop will be permitted. Students found responsible for academic misconduct often receive academic sanctions, which can be severe, and put themselves at risk for disciplinary sanctions assigned by the University's Office of Student Conduct (see Senate Policy G-9).

Disability Accommodation

Penn State welcomes students with disabilities into the University's educational programs. Every Penn State campus has an office for students with disabilities. Student Disability Resources (SDR) website provides contact information for every Penn State campus (http://equity.psu.edu/sdr/disability-coordinator). For further information, please visit Student Disability Resources website (http://equity.psu.edu/sdr/).

In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: See documentation guidelines (http://equity.psu.edu/sdr/guidelines). If the documentation supports your request for reasonable accommodations, your campus disability services office will provide you with an accommodation letter. Please share this letter with your instructors and discuss the accommodations with them as early as possible. You must follow this process for every semester that you request accommodations.

Counseling and Psychological Services

Many students at Penn State face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients' cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation.

Counseling and Psychological Services at University Park (CAPS): 814-863-0395

Counseling and Psychological Services at Commonwealth Campuses

Penn State Crisis Line (24 hours/7 days/week): 877-229-6400

Crisis Text Line (24 hours/7 days/week): Text LIONS to 741741

Educational Equity/Report Bias

Penn State University has adopted a "Protocol for Responding to Bias Motivated Incidents" that is grounded in the policy that the "University is committed to creating an educational environment which is free from intolerance directed toward individuals or groups and strives to create and maintain an environment that fosters respect for others." That policy is embedded within an institution traditionally committed to academic freedom. Bias motivated incidents include conduct that is defined in University Policy AD 91: Discrimination and Harassment, and Related Inappropriate Conduct.

Students, faculty, or staff who experience or witness a possible bias motivated incident are urged to report the incident immediately by doing one of the following:

* Submit a report via the Report Bias webpage http://equity.psu.edu/reportbias/

* Contact one of the following offices:

University Police Services, University Park: 814-863-1111

Multicultural Resource Center, Diversity Advocate for Students: 814-865-1773

Office of the Vice Provost for Educational Equity: 814-865-5906

Office of the Vice President for Student Affairs: 814-865-0909

Affirmative Action Office: 814-863-0471

* Dialing 911 in cases where physical injury has occurred or is imminent.

Tentative Schedule

Week 1 - August 20 - 24

Introduction - Agresti Chapter 1

Lab: Installing `R`

Week 2 - August 27 - 31

Sampling and Measurement - Agresti Chapter 2

August 31 - NO CLASS - APSA Annual Meeting

Week 3 - September 3 - 7

September 3 - NO CLASS - Labour Day

Descriptive Statistics - Agresti Chapter 3

Lab: Introduction to `R`

Week 4 - September 10 - 14

Probability Distributions - Agresti Chapter 4.1-4.3

Lab: Visualizing Data

Week 5 - September 17 - 21

Sampling Distribution - Agresti Chapter 4.4-4.6

September 19 - Problem Set 1 Due

Lab: Summaries and Plots

Week 6 - September 24 - 28

Confidence Intervals - Agresti Chapter 5.1-5.4

Lab: Normal Distribution

Week 7 - October 1 - 5

Hypothesis Testing I - Agresti Chapter 6.1-6.3

Lab: Normal Distribution - Probabilities and Quantiles

Week 8 - October 8 - 12

Hypothesis Testing II - Agresti Chapter 6.4-6.5,6-7

October 10 - Problem Set 2 Due

Lab: Normal Distribution - Confidence Intervals

Week 9 - October 15 - 19

Comparing Two Groups - Agresti Chapter 7.1-7.4

Midterm Exam - October 17

Lab: T test

Week 10 - October 22 - 26

Contingency Tables - Agresti Chapter 8.1-8.4

Lab: Bivariate Display: Discrete Data

Week 11 - October 29 - November 2

Bivariate Regression - Agresti Chapter 9.1-9.5

October 31 - Problem Set 3 Due

Lab: Bivariate Display: Continous Data

Week 12 - November 5 - November 9

Association and Causality - Agresti Chapter 10

Multivariate Regression - Agresti Chapter 11.1-11.4

Lab: Linear Regresssion

Week 13 - November 12 - November 16

Interaction and Dummies - Agresti Chapter 11.5, 13.1-13.4

THANKSGIVING HOLIDAY

Week 14 - November 26 - November 30

Regression Diagnostics - Agresti Chapter 9.6, 14.1-14.3

Lab: Regression Diagnostics

Week 15 - November December 3 - December 7

Logistic Regression - Agresti 15.1-15.3

December 5 - Problem Set 4 Due

Lab: Logistic Regression

FINAL EXAM (TBD)