Course Title: Quantitative Techniques and Systems Analysis in Policymaking and Management
Course Number: SIPA U6310
Meeting Date/s Times: Mondays, 6:10pm-8:00pm
Location: IAB 411
Instructor: Selçuk Eren
Office Hours: Mondays, 8:00pm-9:00pm, IAB 1309
Columbia Email Address: se2414@columbia.edu
Teaching Assistant: Siwei Liu sl4224@columbia.edu
Recitation Sections: Mondays, 2:10pm-4:00pm – IAB 510A
   Tuesdays, 4:10pm- 6:00pm – IAB 510A

Course Description

This course is about social science research methods, with a heavy focus on quantitative techniques. Students in this course will learn to formulate research and policy questions amenable to empirical inquiry, and to identify and apply appropriate methods of measurement and analysis to answer these questions.

This course begins with the discussion on the formulation of research questions derived from policy and management objectives, followed by the collection and organization of data, and finally the presentation and analysis of facts.

This course emphasizes the conceptual understanding of statistics that can be readily applied in the practice of public management and policy. In terms of statistical methods, the course covers descriptive statistics for univariate and bivariate analysis, such as concepts and measures of central tendency, dispersion and contingency tables, and inferential statistical techniques including chi square, difference in means, and simple and multiple regression analysis.

To complement the lecture, students are introduced to the use of STATA, a computer- based data analysis tool. Later in the semester, the class is divided into groups to work on problems relating to environmental policy and research. The groups formulate research questions and model, collect, code, clean, and analyze data. Towards the end of the class, students are required to present their finding, and produce an analytical report.

Course Expectations

The grade is based on class participation, problem sets, one midterm exam, and a final presentation and a final paper (details will follow). Pre-class reading, regular attendance at lectures, thoughtful class participation and diligent efforts to do the problem sets are each necessary to master the course.
The students are required to attend weekly lectures, and participate in weekly lab recitation sessions to develop proficiency with the statistical software STATA.

Textbook and Reading
Required
Berman, Evan & Xiao Hu. Essential Statistics for Public Managers and Policy Analysts. Third Edition.

Recommended
James H Stock & Mark Watson. Introduction to Econometrics. Third Edition
David Moore & William Statistics: Concepts & Controversies. Eighth Edition

Method of Evaluation
Regular attendance and active class participation are expected. Students should have done the readings for each lecture before class. Grades for the course will be based on:
Class Participation (10%)
Attendance will be taken during lectures and recitations. Students are required to attend one recitation per week. Please attend your assigned recitation as there are limited seats available in the lab.
Midterm Examination (25%)
The examination will be given in class. Each student is required to take the examination.

Presentation (10%)
Students will present their findings of their independent research. Details will be provided separately.
Research Paper (35%)
Research paper will be due the Final Examinations week.
Problem Sets (20%)
There are 4 problem sets. Problem sets are always due at the beginning of class and no late problem sets will be accepted. You will form groups of 2 people to work on the problem sets. The overall grade will be weighted as above
However, SIPA policy dictates that a core course such as this one must have a GPA of between 3.2 and 3.4, with the goal of 3.3, a B+. As such, the overall grade will be curved appropriately, with B+ considered a good grade that signifies confidence in your ability to conduct independent work in a professional environment with quality.
A grade of B therefore signifies minor problems that need improvement, and B- signifies significant issues requiring improvement. A and A- are reserved for work that distinguishes itself by going above and beyond a simply correct answer.
Re-Grading Policy
If you feel your solution has been overlooked or graded it incorrectly, please hand in a written note explaining why the particular item should be regarded within two weeks after the problem set/exam was made available for pick-up. Once the two weeks have passed, you forfeit the right for a re-grade.
Course Outline
The following is a preliminary course outline. The lecture schedule and other material are subject to change to accommodate the flow of the course. Additional readings will be posted on CourseWorks before each lecture.

Date	Topic	Reading
Week 1	Introduction and Research Design	Berman & Wang: Chapter 1-3 (p1-60)
Week 2	Sampling and Univariate Analysis	Berman & Wang: Chapter 5-7 (p80-133)
Week 3	Univariate & Bivariate Analysis	Berman & Wang: Chapter 8 (p134-147)
Week 4	Probability and Random Variables	Readings: will be posted on coursework after Lecture 3
Week 5	Sampling Distributions and Statistical Inference	Readings: will be posted on coursework after Lecture 4
Week 6	Statistical Inference 1 - Hypothesis Testing	Berman & Wang: Chapter 10 (p163-187)

Week 7	Statistical Inference 2 – Difference in Means	Berman & Wang: Chapter 12-13 (p205-238)
Week 8	Statistical Inference 3 – Simple Regression	Berman & Wang: Chapter 14 (p239-251)
Week 9	*Midterm Exam*	
Week 10	Statistical Inference 4 – Multiple Regression I	Berman & Wang: Chapter 15 (p252-260)
Week 11	Statistical Inference 4 – Multiple Regression II & Logistic Regression	Berman & Wang: Chapter 15 (p261-276), Chapter 16 (p279-286)
Week 12	Student Presentations	
Week 13	Student Presentations	
Week 14	*Final Research Paper Due*	

Academic Integrity
The School of International & Public Affairs does not tolerate cheating and/or plagiarism in any form. Those students who violate the Code of Academic & Professional Conduct will be subject

to the Dean's Disciplinary Procedures. The Code of Academic & Professional Conduct can be viewed online:
http://bulletin.columbia.edu/sipa/academic-policies/Links to an external site.
Academic dishonesty includes failure to properly cite ideas in your work that are not originally yours. Please familiarize yourself with the proper methods of citation and attribution. The School provides some useful resources online; we strongly encourage you to familiarize yourself with these various styles before conducting your research:
http://bulletin.columbia.edu/sipa/academic-policies/Links to an external site.
Violations of the Code of Academic and Professional Conduct will be reported to the Associate Dean for Student Affairs.

Assignment Due Dates

Problem Set 1	10/1/2019
Problem Set 2	10/15/2019
Problem Set 3	11/5/2019
Problem Set 4	12/3/2019
Midterm Exam	11/11/2019

Research Paper Due Dates

Group List	9/24/2019
Research Proposal	10/8/2019
Literature List	10/22/2019
Data Source Description	11/26/2019
Presentation Slides	Day before presentation
Final Paper Due	12/16/2019