Introduction to Empirical Analysis and Quantitative Methods,
PS 3, Summer 2020*
Four (4) semester credits

Course Description

This course provides an overview of some of the methods employed in political science research. Its purpose is to familiarize you with the scientific study of politics, and to teach you how to pose and answer empirical research questions using appropriate evidence and arguments. Along the way we will learn about how to formulate and evaluate theories, how to design research to discover whether a particular theory holds up empirically, and some basic research strategies. By the end of the course you should have the tools to critically evaluate the kinds of social science arguments found in everyday life and be able to conduct your own independent research.

Prerequisites

There are no prior course requirements other than high school level mathematics.

Course Objectives

After successfully completing this course, you will be able to:

- Distinguish among different types of social science methodologies
- Solve basic 2x2 games
- Describe the logic of the experimental method
- Interpret basic descriptive statistical results
- Formulate and test hypotheses
- Explain and apply bivariate OLS regression

Instructor Information, Contact, Office Hours, & Communication

Course Instructor

Jason Wittenberg

witty@berkeley.edu

Page 1
Graduate Student Instructors (GSIs)
Sarah Lee
lee.sarah@berkeley.edu
Jacqueline Colao
jcolao@berkeley.edu
Shruti Bathia
shruti_bathia@berkeley.edu

While the instructor will interact with the whole class and will oversee all activities and grading, as well as being available to resolve any issues that may arise, the GSIs will be your main point of contact. Your GSIs are responsible for assisting you directly with your questions about assignments and course requirements, as outlined in the Assignments and Calendar. The GSIs will also facilitate ongoing discussion and interaction with you on major topics in each module.

Office Hours

The course instructor and GSIs will offer virtual office hours, when students can communicate in real time (synchronously) using Zoom and the Chat tool. While these office hours are optional, they can be valuable for discussion, answering questions, and reviewing for exams.

Each type of session will be for one hour. However, if no one shows up for the virtual office hours in the first 15 minutes, then that office hour will be cancelled.

We recommend attending office hours even if you think you don’t need to.

Course Mail

Make sure to check the Course Mail for messages from the instructor. You can access course email within the Learning Management System by clicking on the Inbox link or choose to have your course mail forwarded to your personal email account or your cell phone.

Question & Answer Forum

Please use this forum to post questions about the course material, assignments, the learning management system or online homework. The instructor/GSIs will monitor this forum, but you should also feel free to post answers to help other students. This helps
to create a general FAQ so that all students in the course may benefit from the exchange.

**Course Materials and Technical Requirements**

**Required Materials**
- Paul M. Kellstedt and Guy D. Whitten, *The Fundamentals of Political Science Research*. Third Edition. Cambridge: Cambridge University Press, 2018. (Note: There are first and second editions of this book floating around. I cannot say how these editions differ from the third. However, the lectures, assignments, and exams assume the third edition.)
- Other readings for this course will be available on bCourses.

You are free to purchase your textbooks from any vendor. Please be sure to thoroughly review the return policies before making a purchasing decision as UC Berkeley does not reimburse students for course materials in the event of a textbook change or an unexpected cancellation or rescheduled course section.

**Technical Requirements**

This course is built on a Learning Management system (LMS) called Canvas and you will need to meet these [computer specifications to participate within this online platform.](#)

**Optional**

Canvas allows you to record audio or video files of yourself and upload them in the course. Although doing so is not required for any of the activities, using these features will enhance your engagement in the course. If you would like to use these features, you will need to have a webcam and a microphone installed on your computer.

**Technical Support**

If you are having technical difficulties please alert one of the GSIs immediately. However, understand that neither the GSIs, nor the professor can assist you with technical problems. You must call or email tech support and make sure you resolve any issues immediately.

*In your course, click on the "Help" button on the bottom left of the global navigation menu.* Be sure to document (save emails and transaction numbers) for all interactions with tech support. **Extensions and late submissions will not be accepted due to "technical difficulties."**
Learning Activities

VERY IMPORTANT

You won't be able to access your course material until you read and make your pledge to Academic Integrity in the Orientation module in bCourses.

ACADEMIC INTEGRITY PLEDGE

You are expected to fully participate in all the course activities described here.

1. Read the assigned textbook pages
2. Watch and listen to the lecture presentations
3. Read web-based announcements and postings assign during the course
4. Compose and post assigned responses to lectures and readings
5. Complete the midterm exam and final exam
6. Complete writing assignments

“Sections”

For grading purposes, each of you has been assigned to one of the course GSIs and placed within his/her section. Your particular GSI will grade all of your work, as well as that of your section-mates, and engage with you in the course discussions. You can see whose section you've been placed in by exploring the "Section" column within the "People" page or by examining your discussion group's title, which includes your GSI's name. Please note that there will be no live section meetings separate from your GSI’s office hours.

Modules

A module is a grouping of topics related to one area of study, typically with readings, lectures and various kinds of assignments. Each module contains a list of Learning Outcomes for the module. Your assignments reflect the learning activities to perform to reach those outcomes. For an at-a-glance view of due dates and projects, refer to the course calendar.

Reading Assignments

Each module includes assigned readings relevant to each topic covered in that module.

Multimedia Lectures
Recorded lectures support your readings and assignments, but also contain additional material that may be included in the exams. You are expected to take notes while viewing the lectures as you would in a regular classroom.

**Homework - 20%**

There will be eight short homework assignments and a few ungraded self-assessment quizzes that put the modules’ lessons into practice. Some questions will assess basic conceptual understanding, and require short essay-type responses (typically no more than a page). Others will assess how well you can apply the techniques we learn, and require solving problems. To achieve full credit on these problems you will need to both have the correct answer and show the steps you took to reach it. There may also be multiple choice questions in which you will not need to show how you got your answer. Assignments will be posted at the beginning of the week, and are due at the end of the week.

**Discussion Fora - 10%**

Each module contains a group discussion. This is an opportunity to pose questions to each other and the instructors about the material. Your posts and responses to others are considered your class participation and represent a unique opportunity for you to exchange views with your classmates, share ideas, and ensure your understanding of the course material.

Discussion groups have been pre-assigned and include other members of your GSI “section.” When you navigate to a discussion forum, you will automatically be taken to your group's instance of that discussion and to your group's space within the course. When finished with the discussion, you will need to navigate from your group space back to the main course space in order to continue participating in other aspects of the course.

While the Discussion Forum assignments are asynchronous (not real time), you will be expected to make an initial posting by 5:00 pm Wednesday (PST) and to respond to at least one other student’s position by 5:00 pm Friday; continued participation throughout the remainder of the week is highly encouraged.

**Midterm - 35%**
There will be two midterm exams. The exams will consist of problems that are designed to assess your understanding of core concepts and ability to solve problems and interpret your solutions.

If you have a Letter of Accommodation at UC Berkeley, confirm with your GSI that it has been received and accommodations have been made.

**Final Exam - 35%**

There will be an 80 minute open book final exam.

**Extra Credit - 5%**

We are awarding extra credit of up to 5% for participation in office hours and/or posting and responding in the general questions forum. Your grade for this participation will depend on both the quality and quantity of your contribution, as determined by us.

**Reminder: Your Course End Date**

Your course will end on August 14th. As you work through the course, please keep the end date in mind, and if you want to save any commentary or assignments for future reference, please make sure to print or copy/paste those materials before your access ends.

**Grading and Course Policies**

Students are expected to watch multimedia lectures, do the assigned reading, complete all exams and homework, and participate in discussions. The course grade will be based on two in-class midterms, a final exam, homework assignments, and participation in discussions. The course grade will be determined based on the following formula:

**Table 1: Final Grade Percentages**

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion Assignments</td>
<td>10%</td>
</tr>
<tr>
<td>Midterm</td>
<td>30%</td>
</tr>
<tr>
<td>Office Hours</td>
<td>10%</td>
</tr>
<tr>
<td>Homework</td>
<td>20%</td>
</tr>
</tbody>
</table>
It is important to note that not all components are graded online and included in the online course grade book. Because of this, the online course grade book will not display your overall course grade at any given time or your final grade. It should simply be used to assess your performance on the components that are included within it: the discussions, written assignments and midterm exams. Your final letter grade will be mailed to you by the registrar's office.

**Late Work Policy**

Late work will be penalized 10% per late day or portion thereof, and will not be graded if turned in more than two days late. Extensions will not be granted without proof of a legitimate medical or personal reason.

**Course Policies**

**Promptness**

Homework assignments and discussion forum postings all have specific final due dates and times. You will not receive full credit if assignments are submitted after the indicated due date.

Further, each online activity must be submitted through the course website by the due date. Fax or mail submission will not be accepted. Students who wait until the final hours prior to a submission deadline risk having problems with their ISP, hardware, software, or various other site access difficulties. Therefore, it is advisable to submit assignments and tests through the course website early. Students should plan accordingly and get into the habit of checking the course website several times each week, and submitting and posting early.

**Honor Code**

The student community at UC Berkeley has adopted the following Honor Code: "As a member of the UC Berkeley community, I act with honesty, integrity, and respect for others." The expectation is that you will adhere to this code.

**Collaboration and Independence**

Reviewing lecture and reading materials and studying for exams can be enjoyable and enriching things to do with fellow students. This is
recommended. However, unless otherwise instructed, homework assignments and online exams are to be completed independently and materials submitted as homework should be the result of one’s own independent work.

**Cheating**

A good lifetime strategy is always to act in such a way that no one would ever imagine that you would even consider cheating. Anyone caught cheating on a quiz or writing assignment in this course will receive a failing grade in the course and will also be reported to the University Center for Student Conduct.

**Plagiarism**

To copy text or ideas from another source without appropriate reference is plagiarism and will result in a failing grade for your assignment and usually further disciplinary action. For additional information on plagiarism and how to avoid it, explore the resources linked below:

- [UC Berkeley Library Citation Page, Plagiarism Section](#)
- [GSI Guide for Preventing Plagiarism](#)

**Academic Integrity and Ethics**

Cheating on exams and plagiarism are two common examples of dishonest, unethical behavior. Honesty and integrity are of great importance in all facets of life. They help to build a sense of self-confidence, and are key to building trust within relationships, whether personal or professional. There is no tolerance for dishonesty in the academic world, for it undermines what we are dedicated to doing - furthering knowledge for the benefit of humanity.

**Incomplete Course Grade**

Students who have substantially completed the course but for serious extenuating circumstances, are unable to complete the final exam, may request an Incomplete grade. This request must be submitted in writing or by email to the GSI and course instructor. You must provide verifiable documentation for the seriousness of the extenuating circumstances. According to the policy of the college, Incomplete grades must be made up within the first three weeks of the next semester.

**Students with Disabilities**
If you are requiring course accommodations due to a physical, emotional, or learning disability contact the UC Berkeley’s Disabled Students' Program (DSP).

Notify the instructor and GSI through course email and inform them which accommodations you would like to use.

UC Berkeley is committed to providing robust educational experiences for all learners. With this goal in mind, we have activated the ALLY tool for this course. You will now be able to download content in a format that best fits your learning preference. PDF, HTML, EPUB and MP3 are now available for most content items. For more information visit the alternative formats link or watch the video entitled, "Ally First Steps Guide".

### End of Course Evaluation

Before your course end date, please take a few minutes to participate in our Course Evaluation to share your opinions about this course. You will be receiving the Course Evaluation via email. The evaluation does not request any personal information, and your responses will remain strictly confidential. You may only take the evaluation once.

### Course Outline

#### Module 1: Preliminaries: Studying Politics Scientifically

**Digital Media:**
- Is political science a science?
- Where does scientific knowledge about politics originate?

**Readings:**
- Kellstedt and Whitten, Chapter 1.

**Assignments:**
- Homework M1 due at the end of the module.
- An ungraded self-assessment quiz is available.

**Discussions:**
What are the advantages and disadvantages of employing the scientific method in political science?

Take a closer look at the Will article, in which there are two sets of comparisons: post-World War II Germany and Japan; Iraq and Lebanon. What are some potential problems with these comparisons? How do we know when two countries are comparable?

Module 2: THEORY BUILDING

Inductive and Deductive Approaches

Digital Media:
- Inductive theory building
- Deductive theory building

Readings:
- Kellstedt and Whitten, Chapter 2, section 2.8.

Assignments:
- Homework M2 due at the end of the module.
- An ungraded self-assessment quiz is available.

Discussions:
- What are the most important differences between inductive and deductive theory building? What are the weaknesses and strengths of each approach?

Median Voter Theorem

Digital Media:
- Median Voter Theorem

Readings:
- Kellstedt and Whitten, Chapter 2, sections 2.6 through 2.8.
Assignments:

- Homework M2 due at the end of the module.

Discussions:

- Can you think of examples where the Median Voter Theorem largely holds? Where might it be applicable outside of politics?
- Consider exercise 2.3 at the end of chapter 2 of our textbook. What are some possible explanations for variation across countries in the proportion of women elected to parliament?

Module 3: Game Theory

Digital Media:

- Basic concepts
- Prisoners dilemma
- Examples: Arms races, cartel behavior
- Assurance
- Chicken

Readings:


Assignments:

- Homework M3 due at the end of the module.
- An ungraded self-assessment quiz is available.

Discussions:

- How would you characterize in game theoretic terms the nuclear standoff between the US and North Korea? What are some possible payoffs for each side?
- We have been using the term “prisoners dilemma”, but the grammatically correct form requires an apostrophe. Would “prisoner’s dilemma” or “prisoners’ dilemma” best capture the
actual dilemma of the game? (Not the different placements of the apostrophes.)

*The Midterm will occur on 7/20.*

**Module 4: Causality**

**Digital Media:**
- Thinking about causality
- Constructing good causal theories
- Hurdles on the way to a causal relationship

**Readings:**
- Kellstedt and Whitten, Chapter 3.

**Assignments:**
- Homework M4 due at the end of the module.
- An ungraded self-assessment quiz is available.

**Discussions:**
- Violent video games have been blamed for some shootings that have occurred in the US. What are some causal mechanisms that might link violent video games to shootings? What are some potential confounders to this alleged causal relationship?
- Remarkably, the geographic distribution of crime suggests a positive correlation between average education levels and number of criminal incidents. Can this be considered a causal relationship? Why or why not?

**Module 5: RESEARCH DESIGN**

**Experiments**
Digital Media:
- Introduction to research design
- Experiments: the basics
- What are experiments good for?

Readings:
- Kellstedt and Whitten, Chapter 4, sections 4.1 and 4.2.
- Susan D. Hyde, “The Observer Effect in International Politics: Evidence From a Natural Experiment”, World Politics, Volume 60, October 2007, pp. 37-63. (Read through p. 57.)

Assignments:
- Homework M5 due at the end of the module.
- An ungraded self-assessment quiz is available.

Discussions:
- Suppose we were interested in whether serving in the US House of Representatives makes members wealthier. What are the potential confounders? How might one design an experiment to determine this? Some of these will obviously be unethical or impossible, but what are some more relatively more plausible ideas?
- Consider the “YOUR TURN” discussion on page 92 of our textbook. What would be the ethical considerations in the experiment described there?

Observational Studies

Digital Media:
- Introduction to observational designs

Readings:
- Kellstedt and Whitten, Chapter 4, sections 4.3-4.5.

Assignments:
- An ungraded self-assessment quiz will be available.

Discussions:
Consider the Chetty article. What arguments does he make in favor of economics being a science? Do you agree or disagree with them. Why?

STATISTICAL METHODS

Module 6: Introduction to Descriptive and Inferential Statistics

Descriptive Statistics

Digital Media:
- Descriptive statistics

Readings:
- Kellstedt and Whitten, Chapter 6, sections 6.1 through 6.4 (but not 6.4.1 or anything after).

Assignments:
- An ungraded self-assessment quiz will be available.

Discussions:
- What are some real-life situations in which the median is preferable to the mean as a measure of central tendency? Can you think of examples in which it is important to know the dispersion in addition to the central tendency?

Statistical Inference

Digital Media:
- Statistical Inference--preliminaries
- The Central Limit Theorem and its uses

Readings:
- Kellstedt and Whitten, Chapter 7, sections 7.1 through 7.4.
- Kranzler, pp. 115-121.
- Charles Wheelan, Naked Statistics, Chapter 8.

Assignments:
- Homework M6 due at the end of the module.
- An ungraded self-assessment quiz is available.
Discussions:
- How is the sampling distribution different from the distribution of values in the sample and the distribution of values in the population? What are some political science research questions where the Central Limit Theorem would not be applicable?

Module 7: Hypothesis Testing

Digital Media:
- Introduction to hypothesis testing
- Tabular analysis
- Difference of means
- Correlation coefficient

Readings:
- Kellstedt and Whitten, Chapter 8.

Assignments:
- Homework M7 due at the end of the module.
- An ungraded self-assessment quiz will be available.

Discussions:
- Describe in plain language how we know the probability that we are wrong when we reject a null hypothesis. Suppose we do NOT reject the null hypothesis? How would we know then how wrong we are?
- Why do we use a $\chi^2$ for one test and a “t” for two other tests? What distinguishes these two test statistics? Why can’t we just use the normal distribution, as we did with sample means?

Module 8: OLS Regression

Digital Media:
- Introduction to bivariate regression
- Inferring from sample to population

Readings:
- Kellstedt and Whitten, Chapter 9 (but not section 9.5).

Assignments:
- Homework M8 due at the end of the module.
- An ungraded self-assessment quiz is available.

Discussion:
- Discuss the situations in which researchers might prefer bivariate to multivariate regression.
- Discuss the Segal and Conover article. Does their argument convince you? Why or why not?

A Taste of Multivariate (Multiple) Regression

Digital Media:
- Multiple regression

Readings:
- Kellstedt and Whitten, Chapter 10, sections 10.1 through 10.4.

Assignments:
- An ungraded self-assessment quiz will be available.

Final Exam
- The final exam will take place on 8/13.

*Subject to Change