

## Course Information

Course Location	Meeting Days	Time
SSH 308	Tuesday & Thursday	11:00-12:15pm

## Instructor Information

Instructor	E-Mail	Office Location	Hours
Dr. Jason S. Byers	<a href="mailto:jason.byers@uconn.edu">jason.byers@uconn.edu</a>	SSH 433	10 - 11 TTH

## Syllabus

### Course Home

Everything you need for this class (announcements, resources, assignments and other activities) will be posted on HuskyCT. Please plan to check the page regularly.

### Course Description

Scholars in political science and in disciplines across the social sciences are increasingly relying on quantitative, data-driven methods to answer important questions in their field. This course provides an introduction to the study of politics through quantitative reasoning and data analysis. Like a traditional research methods course, we will cover the fundamentals of empirical research in political science including causal inference, summary statistics, data visualization, and regression. However, unlike a traditional research methods course, this course places a particular emphasis on developing technical skills used to conduct real world data analysis. Therefore, a significant amount of the coursework will be dedicated to learning how to program in the statistical computing environment, R. The goal is for you to gain a valuable skillset in data analysis that you can use in your political science classes and, more importantly, in your future careers.

### Learning Outcomes

Together, we will strive for your individual and collective success in achieving the learning outcomes of this course. At the conclusion of this course, students will be able to:

- Define and describe the varied nature of quantitative analysis in political science
- Understand each step of the data lifecycle, identify potential sources of statistical and human bias, and determine their implications on the scope of inference.
- "Think with data" by using statistical software to explore, analyze, visualize, and interpret nontrivial datasets with relevance and importance to the social sciences.
- Identify and evaluate misuses, distortions, and misrepresentations of data and statistics.
- Apply your statistical literacy to issues within political science.
- Communicate clearly and persuasively with data

### Prerequisites

There are no prerequisites for this course. In particular, I will assume no previous experience with R, computer programming, or statistics.

### Course Materials

To maximize access to this class, we will use some textbooks, videos, and other resources, with a focus on the following:

- Primary Text (DASS): Llaudet, Elena and Kosuke Imai. 2022. [Data Analysis for Social Science: A Friendly and Practical Introduction](#). Princeton University Press.
- Primary Text (R4DS): Wickham, Hadley and Garrett Grolmund. 2016. [R for Data Science: Import Tidy, Transform, Visualize, and Model Data](#). O'Reilly Media. This book is freely available online. It is also available in paperback, if you prefer a hard copy. Warning: some content and the numbering system differs between print and online versions; I will exclusively refer to the free online version.

### Reference Texts

- Reference Text (HOPR): Grolmund, Garrett. 2014. [Hands-On Programming with R: Write Your Own Functions and Simulations](#). O'Reilly Media. This book is freely available online. It is also available in paperback, if you prefer a hard copy. Warning: some content and the numbering system differs between print and online versions; I will exclusively refer to the free online version.
- Reference Text (DSB): Cetinkaya-Rundel, Mine. 2021. [Data Science in a Box](#). This book is freely available online.

### Computer Requirements

We will be conducting data analysis in class so that you can practice the skills that you've learned from the textbook and lectures. To conduct data analysis, we will be using the R statistical computing environment on your computer. Please bring your laptops with R installed to every class. You are responsible for having a reliable computer and internet connection throughout the course.

### Software

You will use two freely available programs, R and RStudio, in order to complete the assignments for this course.

### University Policies

The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. Students who require accommodations should contact the Center for Knowledge with Disabilities, Wilbur Cross Building Room 204, (860) 486- 2020 or <http://csd.uconn.edu/>.

### Policy Against Discrimination, Harassment and Related Interpersonal Violence

The University is committed to maintaining an environment free of discrimination or discriminatory harassment directed toward any person or group within its community – students, employees, or visitors. Academic and professional excellence can flourish only when each member of our community is assured an atmosphere of mutual respect. All members of the University community are responsible for the maintenance of an academic and work environment in which people are free to learn and work without fear of discrimination or discriminatory harassment. In addition, inappropriate amorous relationships can undermine the University's mission when those in positions of authority abuse or appear to abuse their authority. To that end, and in accordance with federal and state law, the University prohibits discrimination and discriminatory harassment, as well as inappropriate amorous relationships, and such behavior will be met with appropriate disciplinary action, up to and including dismissal from the University. Additionally, to protect the campus community, all non-confidential University employees (including faculty) are required to report sexual assaults, intimate partner violence, and/or stalking involving a student that they witness or are told about to the Office of Institutional Equity. The University takes all reports with the utmost seriousness. Please be aware that while the information you provide will remain private, it will not be confidential and will be shared with University officials who can help. More information is available at [equity.uconn.edu](http://equity.uconn.edu) and [titleix.uconn.edu](http://titleix.uconn.edu).

### Absences from Class Due to Religious Observances and Extra-Curricular Activities

Faculty and instructors are expected to reasonably accommodate individual religious practices unless doing so would result in fundamental alteration of class objectives or undue hardship to the University's legitimate business purposes. Such accommodations may include rescheduling an exam or giving a make-up exam, allowing a presentation to be made on a different date or assigning the student appropriate make-up work that is intrinsically no more difficult than the original assignment. Faculty and instructors are strongly encouraged to allow students to complete work missed due to participation in extra-curricular activities that enrich their experience, support their scholarly development, and benefit the university community. Examples include participation in scholarly presentations, performing arts, and intercollegiate sports, when the participation is at the request of, or coordinated by, a University official. Students should be encouraged to review the course syllabus at the beginning of the semester for potential conflicts and promptly notify their instructor of any anticipated accommodation needs. Students are responsible for making arrangements in advance to make up missed work. For conflicts with final examinations, students should contact the Dean of Students Office.

### Office of Emergency Management on Emergency Preparedness

In case of inclement weather, a natural disaster, or a campus emergency, the University communicates through email and text message. Students are encouraged to sign up for alerts through <http://alert.uconn.edu>. Students should be aware of emergency procedures, and further information is available through the Office of Emergency Management at <http://publicsafety.uconn.edu/emergency/>.

### Course Organization

Modes of learning in this class (whether assessed directly or indirectly) require a range of skills and abilities. Every student's success is important to me, and I am happy to work with you to develop strategies for success in this class.

Learning R and using it to illuminate and analyze issues within political science and the social sciences requires regular and repeated practice. This course will be an active learning environment, which consists of a mix of lectures, discussions, short demonstrations, presentations, and in-class activities.

- In-Class Activities** Each class day will involve a significant amount of hands-on work with R and data. In order to learn from these activities, you must do the assigned readings and videos before you come to class, and be prepared to ask (and answer) questions before diving into a small group discussion or activity.
- Labs** Weekly assignments (due approximately every Thursday at 11 am Eastern) will provide you with regular practice using quantitative methods in R, and applying these methods to issues within political science. These assignments will build on the material presented in class, and require you to apply the basic concepts in new ways. All lab work is to be done alone. All code must be your own work. You may get help on labs from me and by searching for existing advice on the internet. You may not ask any other person, whether at the University of Connecticut or elsewhere (including the internet) to help you solve a problem.
- Exams** There will be two exams to assess your mastery of the material covered in the course. Both exams will take place during class and will be completed individually.

### Grading

Category	Points
Participation	10 Points
Labs	50 Points
Exam 1	20 Points
Exam 2	20 Points

Your grade will be determined according to the following system:

Grade	Points
A	94 or above
A-	90 - 93
B+	87 - 89
B	84 - 86
B-	80 - 83
C+	77 - 79
C	74 - 76
C-	70 - 73
D+	67 - 69
D	64 - 66
D-	60 - 63
F	0 - 59

## Schedule

A tentative class schedule of topics, readings and due dates is available below. Minor adjustments will be made as needed, on the course web page. Please double check the web page before doing each reading assignment.

### Week 1

#### Topics

- Introduction
- Downloading R/RStudio
- Introduction to R and RStudio
- Introduction to R Markdown

#### Date Readings

1/16 Introduction  
1/18 [HOPR Appendix A](#)  
[DASS Chapter 1-1.5](#)  
[R4DS Chapter 27.1-27.5](#)  
[DASS Chapter 1.6](#)

#### Assignments

- Download and install R and RStudio on your personal machines

### Week 2

#### Topics

- Introduction to R and RStudio
- Observations and Variables
- Computing and Interpreting Means

#### Date Readings

1/23 [DASS Chapter 1.7](#)  
1/25 [DASS Chapter 1.8-1.10](#)

### Week 3

#### Topics

- Getting and Loading Data
- Dealing with Messy Data

#### Date Readings

1/30 [R4DS Chapter 4](#)  
[R4DS Chapter 6](#)  
[R4DS Chapter 11](#)  
[HOPR Appendix D](#)  
2/1 [R4DS Chapter 7](#)  
[R4DS Chapter 12.5](#)

#### Assignments

- Lab 1 Assigned

### Week 4

#### Topics

- Data Visualization

#### Date Readings

2/6 [R4DS Chapter 3.1-3.4](#)  
[Data Visualization in R](#)  
2/8 [R4DS Chapter 3.5-3.10](#)  
[R4DS Chapter 28](#)

#### Assignments

- Lab 1 DUE
- Lab 2 Assigned

### Week 5

#### Topics

- Transforming Data

#### Date Readings

2/13 [R4DS Chapter 5.1-5.4](#)  
2/15 [R4DS Chapter 5.5-5.7](#)

#### Assignments

- Lab 2 DUE
- Lab 3 Assigned

### Week 6

#### Topics

- Estimating Causal Effects with Randomized Experiments

#### Date Readings

2/20 [DASS Chapter 2-2.4](#)  
2/22 [DASS Chapter 2.5-2.7](#)

#### Assignments

- Lab 3 DUE
- Lab 4 Assigned

### Week 7

#### Topics

- Inferring Population Characteristics via Survey Research

#### Date Readings

2/27 [DASS Chapter 3-3.4](#)  
2/29 [DASS Chapter 3.5-3.7](#)

#### Assignments

- Lab 4 DUE
- Lab 5 Assigned

### Week 8

#### Topics

- Exam 1

#### Date Readings

3/5 Exam 1  
3/7 Exam 1

#### Assignments

- Lab 5 DUE
- Exam 1 DUE

### Week 9

#### Topics

- Spring Break

#### Date Readings

3/12 Spring Break (No Class)  
3/14 Spring Break (No Class)

## Week 10

#### Topics

- Predicting Outcomes Using Linear Regression

#### Date Readings

3/19 [DASS Chapter 4-4.4](#)  
3/21 [DASS Chapter 4.5-4.9](#)

#### Assignments

- Lab 6 Assigned

### Week 11

#### Topics

- Estimating Causal Effects with Observational Data

#### Date Readings

3/26 [DASS Chapter 5-5.3.1](#)  
3/28 [DASS Chapter 5.3-5.4.2](#)  
[DASS Chapter 5.5-5.7](#)

#### Assignments

- Lab 6 DUE
- Lab 7 Assigned

## Week 12

#### Topics

- Probability

#### Date Readings

4/2 [DASS Chapter 6-6.3](#)  
4/4 [DASS Chapter 6.4-6.8](#)

#### Assignments

- Lab 7 DUE
- Lab 8 Assigned

## Week 13

#### Topics

- Probability
- Quantifying Uncertainty

#### Date Readings

4/9 [DASS Chapter 7-7.2](#)  
4/11 [DASS Chapter 7.3-7.6](#)

#### Assignments

- Lab 8 DUE
- Lab 9 Assigned

## Week 14

#### Topics

- Methods in Political Science

#### Date Readings

4/16 Do Women Promote Different Policies than Men?  
4/18 Does Social Pressure Affect Turnout?

#### Assignments

- Lab 9 DUE
- Lab 10 Assigned

## Week 15

#### Topics

- Exam 2

#### Date Readings

4/23 Exam 2  
4/25 Exam 2

#### Assignments

- Lab 10 DUE
- Exam 2 DUE