POLS 3312 (15272) Arguments, Data and Politics

Mon/Wed 2:30–4:00PM, Classroom: AH 7 (Agnes Arnold Hall)
Department of Political Science
University of Houston
Fall 2022

Instructor

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Course Objective

The objective of this course is to introduce students to social science concepts and tools that help them understand how to evaluate and conduct political science research. This course includes an introduction to the research paradigm in social sciences from the perspective of theory building, research design, and measurement. It then focuses on the fundamentals and implementation of hypothesis testing in various contexts, including but not limited to experimental designs, correlation analysis and regressions. This course requires some math, but it does not involve advanced mathematical techniques such as calculus and linear algebra. Besides, students are expected to apply statistical methods with the help of the `R` language. Coding experience is not a prerequisite for this course, although it can be an asset. This course is aimed to help students to learn basic `R` skills from scratch.

Statistical Tool

This course adopts `R` as the statistical tool. `R` is an open-source statistical software that is free, powerful and popular. There are platforms that make `R` easier to use. Those platforms are called Integrated Developing Environment (IDE). IDEs have a battery of features important to developers, including coding style formatting, package management, debugging, etc. This course will opt for `RStudio`, which is probably the most popular IDE for `R`. Students are supposed to install `R` and `RStudio` as soon as possible. They can download and install the software based on their own operating systems. Click the blue link to install `R` for Windows and MacOS respectively. As for `RStudio`, the free desktop version will suffice this class. The link for `RStudio` is available here.

To encourage students to install `R` and `RStudio` in a timely manner, 2% bonus points will be offered if they successfully get them installed by the end of the first week (23:59pm, Aug 28^{th}). This is a small bonus, but it can have a large impact. The bonus will be based on their final grade. Students getting a final grade of 78 out of 100 will earn additional 1.56 points if they finish this easy task, which could change their letter grade from $C+$ to $B-$. Likewise, a student scoring 88 out of 100 can end up getting an $A-$ instead of $B+$ if they earn additional 1.76 bonus points. More details about this bonus will be announced in the first class meeting.

Course Materials

This course adopts two textbooks: *The Fundamentals of Political Science Research* (Abbreviated TFPSR) by Paul M. Kellstedt and Guy D. Whitten, and *Even You Can Learn Statistics and Analytics: An Easy to Understand Guide to Statistics and Analytics* (Abbreviated EYCLSA) by David M. Levine and David F. Stephan. These two books serve for different purposes. The former is aimed to provide a substantive introduction to political science research, whereas the latter has an attractive advantage of covering technical components in a way accessible to ordinary people.

- Kellstedt, P. M., & Whitten, G. D. (2018). *The Fundamentals of Political Science Research*. Cambridge University Press.
- Levine, D. M., & Stephan, D. (2014). *Even You Can Learn Statistics and Analytics: An Easy to Understand Guide to Statistics and Analytics*. Pearson Education. [E-copy available at the UH library]

Students are not required to purchase them, although it is recommended if they want to check out the full content. The first four weeks will cover a few chapters of TF-

PSR to familiarize students with the research paradigm in the field of political science. I will scan those chapters and post the reading materials on Blackboard. For sessions after the fourth week, we will primarily focus on the EYCLSA, with a few examples drawn from the TFPSR. Readings from EYCLSA will not be posted on Blackboard as an electronic version of the EYCLSA book is available at the UH Library. In addition to these two textbooks, I will occasionally introduce some additional resources, including book chapters and research articles. Those materials will be posted on Blackboard in advance and the class will be notified once the resources are available.

This course is delivered in a "Lecture+Lab" approach. Students will attend a lecture on Monday. Wednesday will see a lab session. The objective is that students should not only be able to understand the rationale and theory by virtue of Monday's lectures, but they also should know how to apply what they've learned using mainstream statistical tool by attending Wednesday's lab session. Students should bring their laptops to the class for Wednesday's lab session. They may check out a laptop from the UH Library Equipment Services if needed.

Each lab session will be based on a lab handout, which contains a dataset to be used for the lab and a `pdf` file that includes `R` code, outputs, and notes. Besides, it also contains an `rmd` file, which is the source file used to compile the `pdf` document. Students will be able to run `R` code within the `rmd` file and edit the `rmd` file to generate their own `pdf` documents.

All lecture notes, reading materials and lab handouts will be posted on Blackboard prior to the class meeting.

Grading Policy

The grade will be based on four components: participation, reading assignments, problem sets, and final exam. The weight for each component is as follows:

1. Participation: 15%
2. Reading assignments: 20% (i.e., $5\% \times 4$)
3. Problem sets: 45% (i.e., $15\% \times 3$)
4. Final exam: 20%
5. Additional bonus points: 2% (based on the sum of the above three)
6. Grading scale. The final letter grade for this course will be determined based on the following system:

A $\in$ [93, 102]
A- $\in$ [90, 92]
B+ $\in$ [87, 89]
B $\in$ [83, 86]
B- $\in$ [80, 82]
C+ $\in$ [77, 79]
C $\in$ [73, 76]
C- $\in$ [70, 72]
D+ $\in$ [67, 69]
D $\in$ [63, 66]
D- $\in$ [60, 62]
F $\in$ [0, 59]

Final grade percentages ending in a decimal of .5 or greater will be rounded up to the next whole number.

All students are expected to attend the class. Absence without a University-accepted excuse will be penalized. Participation not only takes the form of attendance, but also active engagement in the course. Students might be randomly called on to answer some questions. They will be evaluated based on whether they are present in class and if they are called, how well they are able to answer the question.

There are four reading assignments throughout the semester. The specific date for distributing these assignments is to be determined. These assignments consist of short answer questions to help students digest the reading materials assigned for that week. The assignment will be posted on Blackboard on Monday and due the Sunday following our class meetings. Late work will not be accepted.

In addition, there will be three take-home problem sets, with each accounting for 15% of the final grade. Students will be given one week to accomplish each problem set on their own. No one is allowed to plagiarize other people's work. If caught, he or she will receive a zero on that assignment. Moreover, students should turn in their homework via Blackboard in a timely manner. Late submissions will lead to following grade penalty depending on how late it is:

- Lateness within 24 hours of the deadline will result in a 5-point penalty.
- Lateness within 48 hours of the deadline will result in a 10-point penalty.
- Homework submitted over 48 hours later than the deadline will NOT be accepted.

Finally, students must complete a final exam at the end of the semester. Materials on the exam will be drawn from lectures, lab handouts and reading assignments. Students will have five days to complete the final exam. Late work will not be accepted.

Assignments and Deadlines

All assignments will be distributed through Blackboard. I will set up a TurnItIn submission link for each assignment. Students are expected to submit an electronic version of their work to Blackboard. Hard copies will not be accepted. As noted earlier, everyone must meet the following deadlines to receive due credits:

- Aug 28^{th}: deadline for submitting evidence of installation to earn 2% bonus points.
- Aug 29^{th}: the last day to add a class for regular session courses.
- Sep 7^{th}: the last day to drop a course without a grade.
- Sep 19^{th}: distributing the first problem set. Due at noon, Sep 26^{th}.
- Oct 17^{th}: distributing the second problem set. Due at noon, Oct 24^{th}.
- Nov 16^{th}: the last day to drop a class or withdraw with a "W."
- Nov 21^{st}: distributing the third problem set. Due at noon, Nov 28^{th}.
- Nov 30^{th}: distributing the final exam. Due at noon, Dec 5^{th}.

The dates for distributing four reading assignments are to be determined.

COVID-19 Prevention

Given the spread of COVID-19 and variants, students should pay sufficient attention to personal protection. While the mask mandate has been lifted, wearing a mask in class is strongly encouraged. If you are experiencing any COVID-19 symptoms that are not clearly related to a pre-existing medical condition, do not come to class. Please see Student Protocols for what to do if you experience symptoms and Potential Exposure to Coronavirus for what to do if you have potentially been exposed to COVID-19. Consult the (select: Undergraduate Excused Absence Policy or Graduate Excused Absence Policy) for information regarding excused absences due to medical reasons.

COVID-19 Information

Students are encouraged to visit the University's COVID-19 website for important information including diagnosis and symptom protocols, on-campus testing, and vaccine information. The University is providing free tests of COVID-19 near the Student Center South. The test will just take a couple of minutes and the results are available in one or two days. An appointment can be made here.

Vaccinations

Data suggest that vaccination remains the best intervention for reliable protection against COVID-19. Students are asked to familiarize themselves with pertinent vaccine information and to consult with their health care provider. The University strongly encourages all students, faculty and staff to be vaccinated.

University Policies and Resources

Reasonable Academic Adjustments/Auxiliary Aids

The University of Houston complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for disabled students. In accordance with Section 504 and ADA guidelines, UH strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe that you have a disability requiring an academic adjustments/auxiliary aid, please contact the Justin Dart Jr. Student Accessibility Center (formerly the Justin Dart, Jr. Center for Students with DisABILITIES). For more information, including documentation requirements, a list of available academic support services, and test administration policies, please visit http://www.uh.edu/csd/.

Excused Absence Policy

Regular class attendance, participation, and engagement in coursework are important contributors to student success. Absences may be excused as provided in the University of Houston Undergraduate Excused Absence Policy and Graduate Excused Absence Policy for reasons including: medical illness of student or close relative, death of a close family member, legal or government proceeding that a student is obligated to attend, recognized professional and educational activities where the student is presenting, and University-sponsored activity or athletic competition. Under these policies, students with excused absences will be provided with an opportunity to make up any quiz, exam or other work that contributes to the course grade or a satisfactory alternative. Please read the full policy for details regarding reasons for excused absences, the approval process, and extended absences. Additional policies address absences related to military service, religious holy days, pregnancy and related conditions, and disability.

Recording of Class

Students may not record all or part of class, livestream all or part of class, or make/distribute screen captures, without advanced written consent of the instructor. If you have or think you may have a disability such that you need to record class-related activities, please contact the Justin Dart, Jr. Student Accessibility Center. If you have an accommodation to record class-related activities, those recordings may not be shared with any other student, whether in this course or not, or with any other person or on any other platform. Classes may be recorded by the instructor. Students may use instructor's recordings for their own studying and notetaking. Instructor's recordings are not authorized to be shared with anyone without the prior written approval of the instructor. Failure to comply with requirements regarding recordings will result in a disciplinary referral to the Dean of Students Office and may result in disciplinary action.

Syllabus Changes

Due to the changing nature of the COVID-19 pandemic, please note that the instructor may need to make modifications to the course syllabus and may do so at any time. Notice of such changes will be announced as quickly as possible through an email from the instructor.

Academic Honesty Policy

High ethical standards are critical to the integrity of any institution, and bear directly on the ultimate value of conferred degrees. All UH community members are expected to contribute to an atmosphere of the highest possible ethical standards. Maintaining such an atmosphere requires that any instances of academic dishonesty be recognized and addressed. The UH Academic Honesty Policy is designed to handle those instances with fairness to all parties involved: the students, the instructors, and the University itself. All students and faculty of the University of Houston are responsible for being familiar with this policy.

Students should get familiar with the University's policies at http://www.uh.edu/academic-honesty-undergraduate and http://www.uh.edu/provost/policies/honesty/. In this course, students are allowed to complete assignments in small groups as long as everyone participates equally and submits their own work. Plagiarism can be defined as taking someone else's work or ideas and passing them off as your own. This includes copying a classmate's solution to a problem. Students found to have plagiarized in an assignment will receive a zero on that assignment.

UH Email

Please check and use your UH email address for communications related to this course. The email address should end with `uh.edu`. It is your responsibility if you fail to receive a notification email from me when you don't use a UH email address.

Statement on Counseling and Psychological Services

Counseling and Psychological Services (CAPS) can help students who are struggling with managing stress, adjusting to college life, or feeling sad and hopeless. You can contact CAPS at 713-743-5454 (`www.uh.edu/caps`) during and after business hours for routine appointments, or if you or someone you know is in crisis. Also note that the University of Houston provides the "Let's Talk" program that makes convenient drop-in consultation service available around campus. For more details, see `http://www.uh.edu/caps/outreach/lets_talk.html`.

Schedule

Week 1: Course Overview

1. August 22 (Monday): Lecture
    - Kellstedt and Whitten (2018), TFPSR Chapter 1
2. August 24 (Wednesday): Lab
    - Installing R and RStudio
    - Make sure to submit your evidence of installation by Aug 28^{th} to earn 2% bonus points.

Week 2: Theory Building

1. August 29 (Monday): Lecture
    - Kellstedt and Whitten (2018), TFPSR Chapter 2.1–2.6
    - Note that August 29^{th} is the last day to add a class for regular session courses.
2. August 31 (Wednesday): Lab
    - Making Use of RMarkdown

Week 3: Research Design

1. September 5 (Monday): Labor Day
   - No Class Meeting
2. September 7 (Wednesday): Lecture
   - Kellstedt and Whitten (2018), TFPSR Chapter 4
   - Note that September 7^{th} (Wednesday) is the last day to drop a course without a grade.

Week 4: Measurement

1. September 12 (Monday): Lecture
   - Kellstedt and Whitten (2018), TFPSR Chapter 5
2. September 14 (Wednesday): Lab
   - R Basics

Week 5: Experimental Design

1. September 19 (Monday): Lecture
   - Bhattacherjee (2012), Chapter 10
2. September 21 (Wednesday): Lab
   - Data Visualization

Week 6: Observational Studies and Statistics

1. September 26 (Monday): Lecture
   - Levin and Stephan (2014), EYCLSA Chapter 1&3
2. September 28 (Wednesday): Lab
   - Descriptive Statistics

Week 7: Probability Distribution

1. October 3 (Monday): Lecture

- Levin and Stephan (2014), EYCLSA Chapter 4&5

2. October 5 (Wednesday): Lab
    - Understanding Discrete Probability

Week 8: Statistical Distribution and Hypothesis Testing

1. October 10 (Monday): Lecture
    - Levin and Stephan (2014), EYCLSA Chapter 6&7
2. October 12 (Wednesday): Lab
    - Understanding Continuous Probability

Week 9: Hypothesis Testing with Numerical Data

1. October 17 (Monday): Lecture
    - Levin and Stephan (2014), EYCLSA Chapter 8.2, 8.3 & 9.2
2. October 19 (Wednesday): Lab
    - Conducting t test and ANOVA

Week 10: Hypothesis Testing with Categorical Data

1. October 24 (Monday): Lecture
    - Levin and Stephan (2014), EYCLSA Chapter 8.1 & 9.1
2. October 26 (Wednesday): Lab
    - Equal Proportion Test and Chi Square Test of Independence

Week 11: Correlation

1. October 31 (Monday): Lecture
    - Field et al. (2012), Chapter 6.1–6.5
2. November 2 (Wednesday): Lab
    - Correlation Coefficients and Significance Testing

Week 12: Simple Linear Regression

1. November 7 (Monday): Lecture
    - Levin and Stephan (2014), EYCLSA Chapter 10
2. November 9 (Wednesday): Lab
    - From Correlation to Regression

Week 13: Multiple Regression

1. November 14 (Monday): Lecture
    - Levin and Stephan (2014), EYCLSA Chapter 11
2. November 16 (Wednesday): Lab
    - Interpreting Multiple Regression Results
    - Note that November 16^{th} (Wednesday) is the last day to drop a class or withdraw with a "W."

Week 14: Regression Diagnostics

1. November 21 (Monday): Lecture
    - Monogan (2015), Chapter 6
    - Fox (1991), *Regression Diagnostics: An Introduction* (pp. 10–61)
2. November 23 (Wednesday): Lab
    - Bracing for Critiques on Regression Analysis

Week 15: Final Exam

1. November 28 (Monday): Q&A
    - Come to the class if you have questions to ask.
2. November 30 (Wednesday): Final Exam
    - Distributing the final exam at noon.