

# Bush School of Government and Public Service

## Political Science



### POLS 602 Syllabus

Section 600 (12505)  
Quantitative Political Analysis  
Fall 2025 - College Station

### Course Information

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**Meeting Times:** Meeting Type: LEC

Meeting Days: R

Start Time: 11:55AM

End Time: 1:10PM

Start Date: 08/25/2025

End Date: 12/16/2025

**Meeting Location:** ALLN 1016

**Meeting Times:** Meeting Type: LEC

Meeting Days: T

Start Time: 11:55AM

End Time: 1:10PM

Start Date: 08/25/2025

End Date: 12/16/2025

**Meeting Location:** ALLN 1016

**Meeting Times:** Labs Wednesday @ 3:00

**Credit Hours:** 3

### Instructor Details

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Michael Burnham

**Email:** mlb6496@tamu.edu

**Office:** ALLN 3052

**Phone:** 000

**Office Hours**

W 10:00-12:00 and by appointment

## **Course Description**

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Contemporary political science is a quantitative discipline. This course is designed to introduce you to the theory, process, and tools of social science research. It places a particular emphasis on research design and what assumptions we make when modeling data. Its goal is to help you develop a strong intuition about what makes credible research, and equip you with the tools necessary to carry out that research.

This course assumes no prior knowledge of statistics or programming. Once you have completed this course, you will be comfortable both designing and interpreting statistical models, as well as writing the code necessary to fit the models.

## **Course Prerequisites**

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**Prerequisite/Corequisite(s):** POLS 601 or equivalent.

## **Special Course Designation**

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ACST

## **Course Learning Outcomes**

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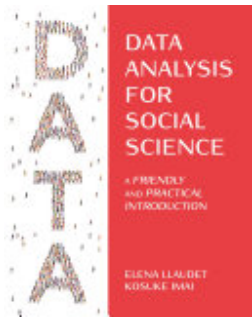
Upon completion of this course, the learner will:

- Understand the fundamentals of quantitative reasoning and research design.

- Know the basics of causal inference and understand what constitutes good evidence in social science.
- Be competent with basic computing tools like R and Git.

## Textbook and/or Resource Materials

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### **This material is: Required**

Data Analysis for Social Science

**ISBN:** 9780691229348

**Authors:** Elena Llaudet, Kosuke Imai

**Publisher:** Princeton University Press

**Publication Date:** 2022-09-13

## Grading Policy

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### **Assignments:** 50%

There will be seven problem sets throughout the semester that will be completed in R, and a research design that will be presented in the final two weeks of the semester.

### **Exams:** 50% (25% midterm, 25% final)

The midterm and final will both be short answer exams. I will ask you to provide a brief explanation of concepts covered in class, or pose questions about measurement, modeling, and inference to you. Exams are designed to test your conceptual understanding of the material. Expect them to be light on math and programming. A study guide with example questions will be provided one week before midterms, but do not expect that questions will be exactly the same as the ones on the study guide.

### **Grading Scale:**

A: 90-100

B: 80-89

C: 70-79

D: 60-69

## Late Work Policy

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Work submitted by a student as makeup work for an excused absence is not considered late work and is exempt from the late work policy ([Student Rule 7](#)).

## Course Schedule

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Module	Date	Topic	Reading	Problem Sets
Math Camp	August 26			
	August 28			
	September 2			
	September 4			
Computing	September 9	Introduction to Computing		
	September 11	APSA		
	September 16	Introduction to R		
	September 18	Thinking Programmatically		
Randomized Experiments	September 23	Causal Effects with Randomized Experiments	2-2.4	PS 2
	September 25	Does Social Pressure Increase the Probability of Turning out to Vote?	2.5-2.7	
Survey Research	September 30	Surveys and Exploring Variables	3-3.4	PS 3
	October 2	Exploring the Relationship Between Two Variables	3.5-3.7	
Linear Regression	October 7	Predicting Non-Binary Outcomes	4-4.4	PS 4
	October 9	Predicting Binary Outcomes	4.6-4.9	
	October 14	Fall Break		

Midterm	October 16	Review		
	October 21	Midterm		
Causal Inference with Observational Data	October 23	Confounders	5-5.3.1	PS 5
	October 28	Controlling for Confounders with Multiple Linear Regression	5.3.2-5.4.2	
	October 30	Internal and External Validity	5.5-5.7	
Probability	November 4	Probability	6-6.8	PS 6
	November 6	Probability 2		
Quantifying Uncertainty	November 11	Hypothesis Testing with Coefficients	7-7.6	PS 7
	November 13	Does Social Pressure Affect Turnout?		
Inference	November 18	Design Based Inference		Research Design
	November 20	Abductive Reasoning	What Good Is a Regression? Spirling and Stewart (2025)	
Presentations	November 25	Presentations		
	November 27	Thanksgiving		
	December 2	Presentations		
	December 4	Presentations		
	December 9	Reading Day		
	December 11	Finals		
	December 16	Finals		

## Additional Course Information

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### Research Design Presentations

During the final two weeks of class each of you will briefly present a research design. This will be formatted like a conference presentation. Prepare a brief slide deck that explains your research question, your data, and how you plan to answer

the question. Emphasize identification threats and how you will address them, and how your project makes a meaningful contribution. After your presentation, your peers will provide feedback and ask questions about your project. I encourage you to think about potential questions throughout the semester, but this is not intended to be a semester long project.

## **Problem Sets**

Problem sets 1-4 are due any time before the midterm. Problem sets 5-7 are due any time before the final. However, I highly encourage you to work on problem sets as they are assigned. This will help you take advantage of weekly labs led by the TAs and prepare you for the exams.

## **R**

Problem sets will largely be done in R and R studio. If you are new to programming, I highly recommend sticking with R studio as your development environment. It is very reliable software with lots of resources to help should anything break. If you already have some experience programming, you may want to consider using Positron for your development environment. While Positron is not as mature as R studio, it more seamlessly integrates with Python, virtual environments, and other file types such as Jupyter notebooks. You may not need these in this course, but these will all be valuable tools in the future if you think computing will be a significant part of your academic work.

## **Git and GitHub**

Instead of Canvas, we will be using **GitHub** for posting course material and turning in assignments. Git is a tool used for software version control. It has also become a widely adopted tool for creating reproducible science. To turn in assignments you will create a GitHub repository for this course and upload completed assignments to the repository. It is not as user friendly as canvas. I understand this, and I understand that there will be some friction in using it. That's okay! The primary motivation for using GitHub is to teach you the tools of the discipline.

## **Technology Support**

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## **Technology Services (IT) - Main Campus**

Hours: 24/7

Phone: (979) 845-8300

Email: [helpdesk@tamu.edu](mailto:helpdesk@tamu.edu)

Call/Chat/Email/visit: <https://it.tamu.edu/help>

## **Canvas LMS Technical Support**

Hours: 24/7/365

Phone: (877) 354-4821

Email: [support@instructure.com](mailto:support@instructure.com)

Support is available by clicking the Help button at the far left in the Canvas global navigation menu.

Canvas Resources are also linked on the home page of every Canvas course.

## **University Policies**

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This section outlines the university-level policies that must be included in each course syllabus. The TAMU Faculty Senate established the wording of these policies.

### **Attendance Policy**

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The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to [Student Rule 7](#) in its entirety for information about excused absences, including definitions, and related documentation and timelines.

### **Makeup Work Policy**

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Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in

Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to [Student Rule 7](#) in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor” ([Student Rule 7, Section 7.4.1](#)).

“The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence” ([Student Rule 7, Section 7.4.2](#)).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. ([See Student Rule 24](#).)

## **Academic Integrity Statement and Policy**

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*“An Aggie does not lie, cheat or steal, or tolerate those who do.”*

“Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one’s work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case” (Section 20.1.2.3, [Student Rule 20](#)).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at [aggiehonor.tamu.edu](http://aggiehonor.tamu.edu).

## **Notice of Nondiscrimination**

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Texas A&M University is committed to providing safe and non-discriminatory learning, living, and work environments for all members of the University community. The University provides equal opportunity to all employees, students,



applicants for employment or admission, and the public, regardless of race, color, sex (including pregnancy and related conditions), religion, national origin, age, disability, genetic information, or veteran status.

Texas A&M University will promptly, thoroughly, and fairly investigate and resolve all complaints of discrimination, harassment (including sexual harassment), complicity, and related retaliation based on a protected class in accordance with [System Regulation 08.01.01](#), [University Rule 08.01.01.M1](#), [Standard Administrative Procedure \(SAP\) 08.01.01.M1.01](#), and applicable federal and state laws. In accordance with Title IX and its implementing regulations, Texas A&M does not discriminate on the basis of sex in any educational program or activity, including admissions and employment.

The following person has been designated to handle inquiries and complaints regarding the non-discrimination policies: Jennifer M. Smith, TAMU Associate VP & Title IX Coordinator at YMCA Ste 108, College Station, TX 77843, 979-458-8407, or email [civilrights@tamu.edu](mailto:civilrights@tamu.edu). For other reporting options, visit the [U.S. Department of Education Office for Civil Rights Complaint Assessment System](#) to locate the address and phone number of the office that serves your area, or call 1-800-421-3481.

## **Civil Rights, Free Speech, and Title IX Policies**

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Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit discrimination and harassment based on an individual's race, color, sex, (including pregnancy and related conditions), religion, national origin, age, disability, genetic information, veteran status, or any other legally protected characteristic. This includes forms of sex-based violence, such as sexual assault, sexual harassment, sexual exploitation, dating/domestic violence, and stalking.

Students can report discrimination/harassment, access supportive resources, or learn more about their options for resolving complaints on the [University's Civil Rights & Title IX webpage](#).

Students should be aware that all university employees (except medical or mental health providers) are mandatory reporters, which means that if they observe, experience or become aware of an incident that they reasonably believe to be discrimination/harassment alleged to have been committed by or against a person who was a student or employee at the time of the incident, the employee must report the incident to the university.

## **Americans with Disabilities Act (ADA) Policy**

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Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact the Disability Resources office on your campus (resources listed below). Disabilities may include, but are not limited to, attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability-related needs with Disability Resources and their instructors as soon as possible.

To request academic accommodations, contact the designated ADA office based on your location:

- Texas A&M University, College of Nursing, College of Dentistry, Irma Lerma Rangel College of Pharmacy College Station, College of Medicine, School of Public Health, Institute of Biosciences and Technology, EnMed Program, Bush School in Washington DC, Mays Business School – CityCentre, TAMU Engineering Academies, Texas A&M University Higher Education Center at McAllen and Texas A&M University at Galveston should contact Disability Resources at (979) 845-1637 or [disability@tamu.edu](mailto:disability@tamu.edu).
- Texas A&M University School of Law should contact the Office of Student Affairs at (817) 212-4111 or [law-disability@law.tamu.edu](mailto:law-disability@law.tamu.edu) to request accommodations.
- Irma Lerma Rangel College of Pharmacy in Kingsville should contact the Disability Resource Center at Texas A&M University-Kingsville at (361) 593-3024 or [drc.center@tamuk.edu](mailto:drc.center@tamuk.edu) to request accommodations.

- Texas A&M University College of Veterinary Medicine & Biomedical Sciences in Canyon should contact the Office of Student Accessibility at West Texas A&M University – Canyon at (806) 651-2335 or [osa@wtamu.edu](mailto:osa@wtamu.edu).

If you are experiencing difficulties with your approved accommodations, contact the office responsible for approving your accommodations or the Texas A&M ADA Coordinator Julie Kuder at [ADA.Coordinator@tamu.edu](mailto:ADA.Coordinator@tamu.edu) or (979) 458-8407.

## **Pregnancy Accommodations**

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Texas A&M provides reasonable accommodations to students due to pregnancy and/or related conditions, such as childbirth, recovery, and lactation. Students should contact the University's [Pregnancy Coordinator](#) as soon as they become aware of the need for accommodation. Depending on the circumstances, accommodations could include extended time to complete assignments or exams, changes in course sequence, or modifications to the physical classroom environment.

Texas A&M will also allow a voluntary leave of absence, ensure the availability of lactation space, and maintain grievance procedures to provide for the prompt and equitable resolution of complaints of sex discrimination. For information regarding pregnancy accommodations, email [TIX.Pregnancy@tamu.edu](mailto:TIX.Pregnancy@tamu.edu).

## **Statement on Mental Health and Wellness**

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Texas A&M University recognizes that mental health and wellness are critical factors influencing a student's academic success and overall wellbeing. Students are encouraged to engage in healthy self-care practices by utilizing the resources and services available through [University Health Services](#). The [TELUS Health Student Support app](#) provides access to professional counseling in multiple languages anytime, anywhere by phone or chat, and the 988 Suicide & Crisis Lifeline offers 24-hour emergency support at 988 or [988lifeline.org](https://988lifeline.org).

### **Texas A&M College Station**

Students needing a listening ear can contact University Health Services at 979.458.4584. Call 911 or visit your nearest emergency room if you are currently experiencing a life-threatening situation or if your safety is at risk. 24-hour emergency help is also available through the 988 Suicide & Crisis Lifeline (988) or at [988lifeline.org](https://www.988lifeline.org).

## **Statement on the Family Educational Rights and Privacy Act (FERPA)**

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FERPA is a federal law designed to protect the privacy of educational records by limiting access to these records, to establish the right of students to inspect and review their educational records, and to provide guidelines for the correction of inaccurate and misleading data through informal and formal hearings.

Currently enrolled students wishing to withhold any or all directory information items can do so within [howdy.tamu.edu](https://howdy.tamu.edu) using the Directory Information Withholding Form. The complete [FERPA Notice to Students](#) and the student records policy is available on the Office of the Registrar webpage.

Items that can never be identified as public information are a student's social security number, citizenship, gender, grades, GPR, or class schedule. All efforts will be made in this class to protect your privacy and to ensure confidential treatment of information associated with or generated by your participation in the class.

Directory items include name, UIN, local address, permanent address, email address, local telephone number, permanent telephone number, dates of attendance, program of study (college, major, campus), classification, previous institutions attended, degrees, honors and awards received, participation in officially recognized activities and sports, medical residence location, and medical residence specialization.

## **Free Speech and Civil Discourse**

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Texas A&M recognizes that the pursuit of truth through open and robust discourse is critical to academic inquiry. However, as a community of scholars, the university

has an aspirational expectation that such discourse will be conducted in accordance with Aggie Core Values. In this “marketplace of ideas,” we encourage civil dialogue creating an environment that allows individuals to express their ideas and to have their ideas challenged in respectful and responsible ways. Students can learn more about Freedom of Expression and Free Speech on the [University's website](#) about the [First Amendment](#).