

GOVT 301: Research Methods

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Office Hours: Monday 2-4 pm, or by email or appt.

Location: Tyler 134

Day/Time: T TR 3:30–4:50pm

1 Overview & Introductory Remarks

Welcome to GOVT 301! This course provides an introduction to research methods and quantitative analysis for social science. In particular, broadly we will focus on (1) research design and (2) data analysis as key components of scientific research on political phenomena, but many of the tools learned will be applicable to other social and behavioral sciences, such as sociology and psychology.

More narrowly, we will break the content up into four sections: *Section 1* will cover concepts, design, and approaches to research and thinking like a scientist; *Section 2* will cover computation and numbers (bringing in the mechanics); *Section 3* will bring in the tools (models, regression, robustness checks); and finally *Section 4* will put everything together focusing on how to properly tell (Sec. 1), test (Secs. 2-3), and diagnose (Secs. 2-3) a story. What story you may ask? I am glad you asked...

Politics is a system, rather than a series of idiosyncratic events. From actors and phenomena, to complications and opinions, political actors (both mass and elite) engage with and react to one another within this system. As such, we need tools to understand this system, predict relevant outcomes and future events, and know how to fix our predictions and models when we screw up or when things happen that surprise us and shock the system in unexpected ways. Understanding these events, actors, and phenomena in such a way essentially results in a broader narrative, or “story.”

The goal underlying this approach, then, is to make you more informed participants in politics (because you all participate, whether you do so intentionally or not), and also to be more principled, creative question-askers. The attributes – *responsibility*, *engagement*, and *creativity* – are broad concepts that apply to all of life and to virtually every discipline far beyond politics and science. So, in brief, it’s my hope that by learning the foundations of research methods (and why they matter), you will be better equipped to engage with the world around you in and beyond college.

The statistical tools you will learn form the foundation of empirical research methods in all forms of scientific inquiry. Back to a broad lens, the first portion on *research design*, as we address it, involves the exploration of such matters as theory construction, hypothesis formulation, how to pose proper research questions, and pay attention to the complicated issues of cause and effect. Then, the second portion of the class is *data analysis* based in large part on statistical methods and reasoning.

As a final sidenote, this course, particularly the second broad portion, necessarily involves some math. Yet, relatively little mathematical background is assumed; I assume only that you are familiar with high school level algebra. This is not to say that having mastered algebra (or even calculus) automatically means you will not struggle with the material; while statistics employs the language of mathematics, it is not simply a branch of mathematics. In fact, while the alge-

bra we will use is relatively straightforward, its *application* in the course of interpreting data can be conceptually challenging. But fear not, battle the common misperception of “innumeracy,” and rest assured that we will tackle this material *together*. You will receive the training and tools necessary to do well in the class. But ultimately, this class will be what you make of it, and the result of that which you invest. We will go through a lot of material, some of it exciting (at least in my opinion), and some of it on the dry side. Also, there will necessarily be some complicated parts that may frustrate you. That’s OK; this is a natural part of learning in general, much less learning math and statistics. As such, regardless of your level of comfort with the material, whether high or low, I encourage all of you to come in with an open mind, allow yourself to consider the world from a different perspective, and most importantly come *prepared* and ready to engage the material, rather than passively receive.

Note: Add/drop period ends: 9/7/18. Withdraw period ends: 10/26/18

2 Text & Materials

Required:

1. Kellstedt, Paul and Guy Whitten. 2013. *The Fundamentals of Political Science Research*, 2nd edition. New York, NY: Cambridge University Press. (Hereafter *KW*)
2. Download the *free* statistical computing program, R:
<https://www.r-project.org/>
3. Download the *free* R complementary platform, R Studio:
<https://www.rstudio.com/products/rstudio/download/>

Recommended:

1. (*Highly Recommended*) Monogan, Jaime. 2015. *Political Analysis Using R*. New York, NY: Springer.
2. Siegel, David A., and Will H. Moore. 2013. *A Mathematics Course for Political and Social Research*. Princeton: Princeton University Press.
3. Salsburg, David. 2001. *The Lady Tasting Tea*. Henry Holt & Co.
4. Ernest Nagel & James R. Newman. 1958. *Godel’s Proof*. See Blackboard page for a PDF of the book.

3 Evaluation & Assessment

There are five components to final grades: (1) short homework assignments (20%), (2) research design paper (20%), (3) midterm exam (25%), (4) final exam (25%), and (5) participation (10%).

1. *Short Homework Assignments (5)*: You will be given five homework assignments during the course of the semester (the first will be a simple completion assignment). Depending on the topic, you may have to respond to additional questions about reading from your texts or assigned articles, extensions of classroom discussion, and/or anything else that seems like it will enhance your learning. I will give more details on these assignments as they come up throughout the semester.

2. *Final Research Design Paper*: The focus of this course is on the design and implementation of social science research. As such, you will create a fully developed research design that would be appropriate for answering an important social scientific question. This means that your project will include an introduction that outlines your research question and its importance, a full literature review, a theoretical section that outlines your hypotheses, and two design components (including testing under optimal conditions, and then under normal (i.e., suboptimal) conditions).

Note: Please feel free to come talk to me at any point in person or via email about questions you have regarding your final paper, as well as help thinking through a good framing question for your project, appropriate methods, conceptual ideas, etc. I am here for you and want you to succeed; you need only take me up on my offer if it would provide sufficient benefit.

Note: I will hand out a separate assignment sheet with more details on this final paper soon.

Final papers will be due the last day of class, Friday, 12/7/18.

3. *Exams (midterm and final)*: Both the midterm and the final exams will be in-class, closed-book, closed-note exams. Performance will be assessed by your responses to questions in a variety of formats. These may include but are not limited to the following formats: multiple choice, definition recall, and mathematical computation. We will discuss the exams and their formats in more detail in class prior to each.

Note: You should bring a scientific calculator to class for the exam. You can purchase a good one for about \$10. You may *not* use a smartphone as your calculator for the exam.

Missing either exam will result in a score of zero. Makeup exams will not be provided without proper documentation, and the student must notify the instructor of the conflict *before* the scheduled exam takes place.

4. *Participation*: All students are expected to complete assigned readings, regularly attend class, and participate in discussion and in-class coding exercises. While I do not wish to pressure you to speak when you do not feel compelled to do so, we will all benefit from hearing a wide range of perspectives. If you are someone who prefers not to speak up in class, I would urge you to step outside your comfort zone and answer (or ask) a question from time to time. If, on the other hand, you are a frequent contributor to class discussion, please be aware of your fellow classmates and make sure you are allowing them a chance to speak when they wish to do so.

Attendance at every class meeting is mandatory and expected in the absence of College-approved documentation for missing. **Otherwise, there are no make-ups, no excused absences, and no late papers or assignments accepted.**

5. *Extra Credit – Interactive Data Visualization*: For up to 25 extra credit points, any student may create an interactive data visualization tool to accompany their final paper.

This can be made manually in the computational program R, via a Shiny app (also in R), or it can be facilitated through the online platform, Plotly. There are other tools out there, but these are the three I have used and trust the most. Plotly also has an R interfacing package for valuable crossover. Essentially, the idea is to reward any student who goes above and beyond by offering an interactive look at their “results” or trends from data used in their papers. *Importantly, complex data analysis is **not** required for the main paper.* But I know some students are particularly adept at data analysis and management, and may enjoy it as I do. Thus, if you want the option to do some extra work for some extra points, feel free to give it a try. I reserve the right to give *up to 25* points, or none at all if I feel the submission is of insufficient quality.

My advice would be that if any of this is unfamiliar to you, I wouldn’t hassle with it. Its tricky to learn programming in general, and in the context of a single semester as a “side project,” I fear the likelihood of success may be low. Still, if you are interested and want to ask me more about any of these things, or other computational tools, please feel free to do so. I have many, many resources and have used these tools a lot as well as published my own software packages and papers, so I can certainly help get you started if you are so inclined. Ultimately, I don’t want to discourage anyone from trying, but I want to reiterate that this is *extra* credit, and thus not required to succeed in the course. Your main assignments counting toward your final grade are significantly more important.

Some more on each:

- (a) R: <https://www.r-project.org/>
- (b) Shiny: <https://www.shinyapps.io/>
- (c) Plotly: <https://plot.ly/>

4 The William & Mary Honor Code

The College of William & Mary has had an honor code since at least 1779. Academic integrity is at the heart of the university, and we all are responsible for upholding the ideals of honor and integrity. The student-led honor system is responsible for resolving any suspected violations of the Honor Code, and I will report all suspected instances of academic dishonesty to the honor system. The Student Handbook (www.wm.edu/studenthandbook) includes your responsibilities as a student and the full Code. Your full participation and observance of the Honor Code is expected. To read the Honor Code, see www.wm.edu/honor.

4.1 The W&M Pledge

As a member of the William and Mary community, I pledge on my honor not to lie, cheat, or steal, either in my academic or personal life. I understand that such acts violate the Honor Code and undermine the community of trust, of which we are all stewards.

4.2 Academic Honesty

The College defines academic dishonesty in several ways, such as plagiarism, which is the form of “deliberate” or “reckless” representation of another’s words, thoughts, or ideas as one’s own without appropriate attribution to the original author in connection with submission of academic work, whether graded or otherwise, is a serious breach of academic integrity demanded by the

Honor Code and one of the most common forms of academic misconduct processed by the honor system. Plagiarism can take many forms and there may be a number of reasons why it occurs. For example:

- Quote and cite any words that are not your own. If you paraphrase the words of another, you must still give proper attribution. If you look it up, write it down.
- Authorized vs. Unauthorized Collaboration. All academic work in this course, including homework, quizzes, and exams, is to be your own work, unless otherwise specifically provided. It is your responsibility if you have any doubt to confirm whether or not collaboration is permitted. Whenever possible, be clear and concise. Ambiguous statements often lead to confusion.

5 Student Accessibility Services

William & Mary accommodates students with disabilities in accordance with federal laws and university policy. Any student who feels s/he may need an accommodation based on the impact of a learning, psychiatric, physical, or chronic health diagnosis should contact Student Accessibility Services staff at 757-221-2509 or at sas@wm.edu to determine if accommodations are warranted and to obtain an official letter of accommodation. For more information, please see www.wm.edu/sas.

6 Outline of Topics & Calendar

Section 1: Conceptual, design, approaches to research and thinking like a scientist

- **Week 1:**
 - *Thursday, 8/30:* Course introduction, background, scientific method
 - * **Reading:** Stimson, “Professional Writing in Political Science: A Highly Opinionated Essay.”
- **Week 2:**
 - *Tuesday, 9/4:* The Science of Politics
 - * **Reading:** KW, chapter 1
 - * **Reading:** Gary King, “Unifying Political Methodology” (Introduction)
 - *Thursday, 9/6:* Light Introduction to R
 - * **Reading:** Intro to R: <https://www.r-project.org/about.html>
 - * **Reading:** Leeper, “Really Introductory Introduction to R”
- **Week 3:**
 - *Tuesday, 9/11:* **CLASS CANCELED**
 - *Thursday, 9/13:* **CLASS CANCELED**

- **Week 4:**

- *Tuesday, 9/18*: Principles of Model Building and Causality
 - * **Reading:** KW, chapter 2
- *Thursday, 9/20*: Causality and Experimental Design
 - * **Reading:** KW, chapter 3
 - * **Reading:** Druckman, et al., CHEPS, Chs.1-2

- **Week 5:**

- *Tuesday, 9/25*: Research Design
 - * **Reading:** KW, chapter 4
 - * **Reading:** Baglione, Chs. 2 & 5, “Writing a Research Paper in Political Science”
- *Thursday, 9/27*: Organizing a Paper and Developing Stories
 - * **Reading:** Baglione, Chs. 7 & 8, “Writing a Research Paper in Political Science”

Section 2: Computation and Numbers (The Mechanics)

- **Week 6:** Computation & What We Can Do with It

- *Tuesday, 10/2*: Thinking methodologically, measurement, key concepts, and comparisons
 - * **Reading:** KW, chapter 5
- *Thursday, 10/4*: Descriptive stats, Data visualization/light, and “working with data” in R
 - * **Reading:** KW, chapter 5 (review)
 - * **Reading:** Wickham & Grolemund, “R for Data Science” (Chapter 4), <http://r4ds.had.co.nz/workflow-basics.html>

- **Week 7:**

- *Tuesday, 10/9*: Concept/design + data + computation
 - * **Reading:** KW, chapter 6 (skim)
- *Thursday, 10/11*: Sampling, probability, statistical theory (light), etc.
 - * **Reading:** KW, chapter 6 (Read more closely/review)

- **Week 8:**

- *Tuesday, 10/16*: **NO CLASS – Fall break (10/13 – 10/16)**
- *Thursday, 10/18*: Exploring relationships between quantitative variables
 - * **Reading:** KW, chapter 7

Section 3: The Tools: Regression, Models, & Robustness Checks

- **Week 9:** Exploring relationships between quantitative variables

- *Tuesday, 10/23*: Numerical Relationships: Bivariate Regression
 - * **Reading:** KW, chapter 8
- *Thursday, 10/25*: **Midterm Exam – All Day, In-Class**

- **Week 10:**

- *Tuesday, 10/30*: Numerical Relationships: Multiple regression
 - * **Reading:** KW, chapter 9 & 10
- *Thursday, 11/1*: Numerical Relationships: Interactions and conditional relationships
 - * **Reading:** Kam and Franzese, Chs. 1 & 3 in “Modeling and Interpreting Interactive Hypotheses in Regression.”
 - * **Reading:** Matt Golder’s “Recommendations” at his site on Interactions, <http://mattgolder.com/interactions>

- **Week 11:** Regression diagnostics

- *Tuesday, 11/6*: Is your model a good one? The best? How do you know? Why does it matter?
 - * **Reading:** KW, pp. 232-244
- *Thursday, 11/8*: Zooming in: Influential Observations

- **Week 12:** Beyond Quantitative Research

- *Tuesday, 11/13*: Qualitative Research, Interviews, and Coding Responses
 - * **Reading:** Fenno, 1977, “U.S. House Members in Their Constituencies: An Exploration”
- *Thursday, 11/15*: Mixed Methods; Translating Text to Data
 - * **Reading:** James Fearon and David Laitin, “Integrating Qualitative and Quantitative Methods: Putting It Together Again”
 - * **Reading:** Grimmer and Stewart, 2013, “Text as Data: The Promise and Pitfalls of Automatic Content Analysis Methods for Political Texts”
 - * **Reading:** Ramey et al. 2016, “Measuring Elite Personality Using Speech”

Section 4: Putting it all together – tell (Sec. 1), test (Secs. 2-3), diagnose (Secs.2-3) a story

- **Week 13:**

- *Tuesday, 11/20*: Paper Workshop day: Substantive and Methodological
 - * **Reading:** KW, chapter 12
- *Thursday, 11/22*: **No Class - Thanksgiving Holiday**

- **Week 14:** Some Not-so-helpful Overviews of Advanced Methods & Data

- *Tuesday, 11/27*: Advanced topics: A Not-so-helpful Overview of Logit & Probit
 - * **Reading:** Scott Long, Chs. 1 & 3, “Regression Models for Categorical and Limited Dependent Variables”
- *Thursday, 11/29*: Advanced topics: A Not-so-helpful Overview of Event Count Modeling
 - * **Reading:** Faraway, Ch. 3, “Extending the Linear Model with R”

- **Week 15:** Final Substantive Week: **Final Papers due Friday, 12/7**

- *Tuesday, 12/4*: Paper Workshop Day
- *Thursday, 12/6*: Exam Review Day: Q&A (Last day of class)

- **Exam Week: Final Exam: Monday, December 10, 2:00-5:00 pm**