GOVT 500: The Scientific Method and Research Design (3 Credits)

**August 15, 2019 Draft**

Fall 2019  
Thursdays, 7:20 – 10:00 pm  
West 1001

Professor: Eric McGlinchey  
Office: 341 Research Hall  
Email: emcglinc@gmu.edu  
Office Hours: Thursdays, 3-6 pm and by appointment

Course Description

This course grounds students in the principles of the scientific method, the framework for investigating research questions in the social sciences. Focus is on sound and rigorous research design. Students will explore approaches and potential pitfalls to conceptualization, measurement, and causality. Along the way students will examine case study, survey, experimental, game theory, and ethnographic research designs. We will assess the strengths and limitations of these approaches in our effort to test hypotheses and build social science theories.

Course Learning Outcomes

By the close of this course, students will be able to:
1. Identify and execute multiple social science research designs.
2. Identify strengths and limitations of different research designs and methods.
3. Write a research proposal that can serve as a foundation for future Masters or PhD research.
4. Orally present research concisely in a way that engages academic as well as policy audiences.
5. Use software tools such as Zotero, R, and LaTeX to facilitate research and research design.

Course Texts

Many course readings are available in digital format through Mason’s library: https://library.gmu.edu/.

Students are encouraged to obtain the following texts:


Instructor-Student Communication

I will respond to your emails within 48 hours. If I will be away from email for more than one day, I will post an announcement to Blackboard. Before sending an email, please check the following:

1. Syllabus
2. Frequently Asked Questions (FAQs)
3. Help forum (Feel free to respond to other students in the Help forum)
4. Blackboard videos on how to use Blackboard features
5. Blackboard Q&A, and
6. Technology Requirements

**Mason EMAIL**
- GMU requires that university email be used for all course communication. I will be sending messages to your Mason email. Please make sure you have access to these messages.
- When you email me, please include GOVT 500 in the subject heading.

**Course Logistics**
We will meet in seminar and use Blackboard to facilitate discussions outside of our weekly meetings. In a typical week:
- You will read between 100 and 200 pages and discuss the material with classmates
- Complete assignments to be submitted through Blackboard according to the assignment schedule
- Prepare opening discussion prompts for seminar discussion

**To Access Blackboard**
1. Go to http://mymason.gmu.edu/.
2. Login using your NETID and password.
3. Click on the ‘Courses” tab.
4. Double-click on GOVT-500 (Fall 2019) under the course listings.

**Technical Help**
- If you have difficulty accessing Blackboard, you can contact ITU Support at 703.993.8870 or support@gmu.edu.
- If you have trouble using features in Blackboard, email courses@gmu.edu.

**Course Requirements**
The following requirements are designed to promote an optimal learning environment for motivated students. This syllabus is a contract. Enrollment in this class constitutes your acceptance of course requirements.

1. Students are expected to complete assigned readings prior to class meetings. Several weeks will contain a reading labelled “PhD Students.” This reading is required for PhD students and optional for MA students.
2. Students will complete 3 short papers. For **MA students**, papers should be a minimum of 1,000 words in length. For **PhD students**, papers should be a minimum of 1,500 words in length. Paper topics are detailed in the course schedule. **Papers are to be submitted through Blackboard by 11:59 pm, the day before the seminar meets.**
3. Students will present in seminar three brief (10 minutes) précis of critical readings.
4. Students will submit a draft research proposal, 1,500 words in length. **The draft research proposal is to be submitted through the Blackboard by 11:59 pm, Wednesday, November 6.**
5. **MA students** will submit a final research proposal, a minimum of 2,500 words in length. **PhD students** will submit a final research proposal, a minimum of 4,000 words in length. **The final research proposal is to be submitted through Blackboard by 11:59 pm, Thursday, December 12.**

**Late Assignments Policy**
One-third of a grade will be deducted for every day a paper is late. Incompletes—both for papers and for the seminar—will be extended only in cases of documented emergencies.
Student Responsibilities

Academic Integrity: Students are responsible for their own work. Students and faculty are responsible for addressing violations of the honor code.

Honor Code: Students must adhere to the guidelines of the George Mason University Honor Code. The George Mason University Honor Code states: “Cheating and attempted cheating, plagiarism, lying, and stealing of academic work and related materials constitute Honor Code violations. To maintain an academic community according to these standards, students and faculty members must report all alleged violations to the Honor Committee.” Students are encouraged to read the full Honor Code (link: https://oai.gmu.edu/mason-honor-code/) and to remain vigilant against any violation of the Code in their own work. Any cases of academic dishonesty in this course will be pursued according to the guidelines detailed in the University Catalog.

Time Conflict George Mason University is committed to creating a welcoming, respectful, and inclusive educational environment that values diversity. Students should review the syllabus at the beginning of the term to determine if there are any conflicts between class time and religious observance. It is the student's responsibility to inform the instructor of these conflicts within the first week of the semester. https://ulife.gmu.edu/calendar/religious-holiday-calendar/

Responsible Use of Computing Students must follow the university policy for Responsible Use of Computing. [See https://universitypolicy.gmu.edu/policies/responsible-use-of-computing/].

University Calendar
Details regarding the current Academic Calendar. [See http://registrar.gmu.edu/calendars/index.html].

University Catalog
The current university catalog. [See https://catalog.gmu.edu].

Student Services

Writing Center
The George Mason University Writing Center staff provides a variety of resources and services (tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing. [See https://writingcenter.gmu.edu].

Counseling and Psychological Services
The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance [See https://caps.gmu.edu].

Family Educational Rights and Privacy Act (FERPA)
The Family Educational Rights and Privacy Act of 1974 (FERPA), also known as the "Buckley Amendment," is a federal law that gives protection to student educational records and provides students with certain rights. [See https://registrar.gmu.edu/privacy].

Special Needs:
Please address any special needs or special accommodations with me at the beginning of the semester or as soon as you become aware of your needs. Those seeking accommodations based on disabilities should contact the Disability Resource Center, [https://ods.gmu.edu] (703) 993-2474, or the Equity Office (703) 993-8730.
**Enrollment:**
Students are responsible for verifying their enrollment in this class. Schedule adjustments should be made by the deadlines published in the Registrar calendar.

**Grading:**

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
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<tbody>
<tr>
<td>3 Precis Papers, 50 points each</td>
<td>150</td>
</tr>
<tr>
<td>Research Proposal First Draft</td>
<td>100</td>
</tr>
<tr>
<td>Research Proposal Final Draft</td>
<td>150</td>
</tr>
<tr>
<td>Research Presentation</td>
<td>20</td>
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<tr>
<td>3 Class Precis Presentations</td>
<td>30</td>
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<tr>
<td>Class Participation</td>
<td>30</td>
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<tr>
<td>Two Peer Reviews</td>
<td>16</td>
</tr>
<tr>
<td>CGG Chapter 2 Problem Set</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>500 points</strong></td>
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**Grading Scale:**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
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<tbody>
<tr>
<td>A+</td>
<td>490-500</td>
</tr>
<tr>
<td>A</td>
<td>460-489</td>
</tr>
<tr>
<td>A-</td>
<td>450-459</td>
</tr>
<tr>
<td>B+</td>
<td>440-449</td>
</tr>
<tr>
<td>B</td>
<td>410-439</td>
</tr>
<tr>
<td>B-</td>
<td>400-409</td>
</tr>
<tr>
<td>C+</td>
<td>390-399</td>
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<tr>
<td>C</td>
<td>360-389</td>
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<tr>
<td>C-</td>
<td>350-359</td>
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<tr>
<td>D+</td>
<td>340-349</td>
</tr>
<tr>
<td>D</td>
<td>310-339</td>
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<tr>
<td>D-</td>
<td>300-309</td>
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<td>F</td>
<td>299 and below</td>
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**Course Schedule**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Readings and Videos</th>
<th>Discussions and Assignments</th>
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<tbody>
<tr>
<td>1/8/29</td>
<td>Introduction: The Scientific Method and Workflow</td>
<td>1. Zotero.org (Review documentation)</td>
<td>Seminar Opening Discussion: The Zotero website, Long reading, and PBS video all address challenges of workflow. What are these challenges? How might they be addressed in our research designs?</td>
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<td></td>
<td></td>
<td>2. J. Scott Long, <em>The Workflow of Data Analysis Using Stata</em>, (Stata Press, 2008), Ch. 2, “Planning, Organizing, and Documenting.” (We won’t be using Stata but Long’s Workflow discussion is excellent)</td>
<td></td>
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<td></td>
<td></td>
<td>3. Outtake from PBS <em>Naturally Obsessed: The Making of a Scientist</em>, <a href="https://www.youtube.com/watch?v=RwOv2Z7byv0">https://www.youtube.com/watch?v=RwOv2Z7byv0</a></td>
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**Seminar Opening Discussion:** Find a social science presentation on the web (you can find many here:
<table>
<thead>
<tr>
<th>3 9/12</th>
<th>Concepts and Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Kellstedt and Whitten, Ch. 5, “Getting to Know your Data,” 92-126.</td>
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<tr>
<th>4 9/19</th>
<th>Causality</th>
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**Seminar Opening Discussion:** Identify two concepts, one for which you believe it is easy to design measures and one which believe it is much more challenging to design clear measures.

**Paper:** Choose a concept to study. Construct two differing research designs that incorporate this concept. Convey to your reader how you conceptualize and measure this concept in the two research designs.

**Paper Deadline:** Papers are due through Blackboard by 11:59 pm, Wednesday.

**Class Lab:** (1) Taking notes on readings. (2) Inserting citations and creating bibliographies using Zotero.

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**Qualitative Research.** (Princeton University Press, 1994), Ch. 1, pp. 3-33, "The Science in Social Science"


**https://www.ted.com/talks)** and identify three strengths and three weaknesses of the talk. What kind of data is the presenter using to advance the talk’s findings?

**Class Lab:** (1) Taking notes on readings. (2) Inserting citations and creating bibliographies using Zotero.

**Seminar Opening Discussion:** Consult the Tuesday Science section of the New York Times or the BBC Science section. Identify an article that forwards a scientific statement. Next identify how this statement could be falsified.

**Paper:** Choose a causal mechanism. Identify two different outcomes you anticipate might be shaped by this causal mechanism. Convey the findings of two political science articles (one for each outcome) regarding the nature of the relationship between the causal mechanism and the dependent variable.

**Paper Deadline:** Papers are due through Blackboard by 11:59 pm, Wednesday.

**Class Lab:** Introduction to R commands and loading data.
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Assignments</th>
</tr>
</thead>
</table>
| 5/26 | Case Study Analysis (CSA) | 1. George and Bennett, Chapters 3-6, pp. 67-123 and Chapters 8-10, pp. 151-231.  
**Seminar Opening Discussion:** Identify a pressing topic in the news and illustrate how a case study may help us better understand this topic.  
**Paper:** Conduct in brief a case study to address a compelling puzzle in the social sciences. Follow George and Bennett’s instructions (Part II of the text) in conducting your case study.  
**Paper Deadline:** Papers are due through Blackboard by 11:59 pm, Wednesday.  
**Class Lab:** Visualizing data and writing R scripts |
| 10/3 | Challenges to CSA: Case Selection | 1. Kellstedt and Whitten, Ch. 12, “Putting It All Together,” 273-292.  
**Seminar Opening Discussion:** Identify a compelling research question and cases that will help you address this question. Justify your selection of cases. Address potential limits of your research designs. In Geddes’ words, address how the cases you have chosen might affect the answers you get.  
**Paper:** Identify a compelling research question and cases that will help you address this question. Justify your selection of cases. Address the limits of your research design and, in Geddes’ words, address how the cases you choose may affect the answers you get.  
**Paper Deadline:** Papers are due through Blackboard by 11:59 pm, Wednesday.  
**Class Lab:** Descriptive statistics in R |

**Seminar Opening Discussion:** What did polling get right in the 2016 presidential election? What did polling get wrong and why? What are lessons learned from polling the 2016 elections?  
**Paper:** Identify a research question you find compelling and two surveys that address this research question. Use the survey data sets to probe competing causal hypotheses identified in the literature. Report your findings.  
**Paper Deadline:** Papers are due through Blackboard by 11:59 pm, Wednesday.  
**Class Lab:** Bivariate hypothesis tests in R |
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<tr>
<th>8/10/17</th>
<th>Complements to CSA: Game Theory</th>
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**Seminar Opening Discussion:** Identify a “game” with at least two players that you encounter in your daily life. Draw a game tree that illustrates the choices players make. Identify the preferences of each player.

**Paper:** Identify a research question that lends itself to game-theoretic analysis. Convey the findings of two political science articles that address this question – one article that applies game theory and one that uses an alternate method. Discuss the contributions and potential limitations of both articles’ approaches to answering the research question.

**Paper Deadline:** Papers are due through Blackboard by 11:59 pm, Monday.

**Class Lab:** Solving extensive and normal form games.

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<tr>
<th>9/10/24</th>
<th>Complements to CSA: Experiments</th>
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**Seminar Opening Discussion:** What are potential ethical concerns worth considering prior to conducting experiments? How can social scientists work to ensure experimental research does not transgress ethical borders?

**Paper:** Identify a research question that lends itself to experimental analysis. Convey the findings of two social science articles that address this question – one article that applies an experimental approach and one that uses an alternate method. Discuss the contributions and potential limitations of both articles’ approaches to answering the research question.

**Paper Deadline:** Papers are due through Blackboard by 11:59 pm, Monday.

**Class Lab:** (1) Run an experiment. (2) Use R to create a data frame with experiment results. (3) Use R to analyze experiment data.

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<thead>
<tr>
<th>10/31</th>
<th>Complements to CSA: Network Analysis</th>
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**Seminar Opening Discussion:** How might network analysis help us better understand the 2016 US presidential election?

**Paper:** Identify a research question that lends itself to network analysis. Convey the findings of two political
2. Padgett, John F. “The Emergence of Organizations and States.”

**Part II**

... and select one article from your field (see Parts III-VI of volume).

Science articles that address this question – one article that applies a network analysis approach and one that uses an alternate method. Discuss the contributions and potential limitations of both articles’ approaches to answering the research question.

**Paper Deadline:** Papers are due through Blackboard by 11:59 pm, Monday.

**Class Lab:** Introduction to LaTeX

### 11/7
**Avoiding Pitfalls / Draft Proposals Due**


**Seminar Opening Discussion:** Where do you stand relative to DART developments? How might DART influence your research?

**Draft Research Proposal:** Write a draft research proposal using the insights of class readings. Successful proposals will offer clearly specified research questions, devote attention to conceptualization and measurement of outcomes and causes, justify case selection and research methodology, and engage the current literature related to the topic under investigation.

**Draft Research Proposal Deadline:** The draft research proposal is to be submitted through the Blackboard by 11:59 pm, Wednesday.

**Class Lab:** Institutional Review Boards / CITI Training

### 11/14
**Research Proposal Workshop & Discussion of Presentation Best Practices**

Reading: Two Research Proposals (Instructor will assign)

**Round Robin of Peer Reviews:** Write one page reviews for two of your colleagues’ research proposals. Reviews are to be completed and uploaded to Blackboard prior to class. Please bring a hard copy of your reviews to class to facilitate discussion.

**Review Deadline:** Reviews are due through Blackboard by 11:59 pm, Monday.

**Presenters:** 10-minute presentations.

### 11/21
**Presentations**

**Presenters:** 10-minute presentations.

### 12/5
**Presentations and Semester Review**

### 12/12
**Final Research Proposal**
| Final Proposal Deadline: | The final research proposal is to be submitted through the Blackboard by 11:59 pm, Thursday, December 12. |