

DRAFT Syllabus: GOVT363-DL1: The "Miracle Machine": how the US Government secured global dominance in science and engineering.

Fall 2025

Synchronous schedule Monday and Wednesdays 12:00-13:15 on Zoom (Discussions and Class Exercise Scenarios)

Asynchronous: Assigned videos, Padlet Board and Written Assignments

Zoom Office hours: By appointment (send me an email)

Instructor: OLDS, JAMES L.

Email: jolds@gmu.edu

Phone: 703-993-3700

Office Location: Room 629 Van Metre Hall, Mason Square Campus

COURSE OBJECTIVES:

To understand the US historical comparative advantage in science and technology that has been extant since the end of the Second World War and to understand why this advantage is now at risk. This "leg up" has been called the "Miracle Machine" by Larry Page, one of Google's founders. We will explore the origins of the Miracle Machine in the Manhattan Project and look at the current erosion of that advantage as other national powers come to fully understand the relationship between achievement in science and geopolitical power.

FREE SPEECH POLICY:

Quoting from George Mason University's Free Speech Policy:

Being exposed to competing perspectives is essential for questioning our assumptions, testing our beliefs, and refining our knowledge. Our goal as a community must be to create an environment where we can engage in difficult and challenging conversations with civility and mutual respect, where confronting opposing ideas and perspectives becomes an opportunity to learn from and with each other.

Our commitment to freedom of expression is not incompatible with our commitment to diversity and to nurturing a positive and collaborative environment where everyone can thrive. On the contrary, it is by achieving the latter that freedom of expression becomes a powerful tool for personal learning and growth. But our efforts to build a civil and respectful environment cannot be used as reasons to limit the rights of others to express views that we may consider misguided or even offensive. As articulated by a 2014 [report from the University of Chicago](#), we must hold a fundamental commitment to "the principle that debate or deliberation may not be suppressed because the ideas put forth are thought by some or even by most members of the University community to be offensive, unwise, immoral, or wrong-headed."

LEARNING OUTCOMES:

- To acquire an inventory knowledge of the US Science and Technology Ecosystem
- To understand the history of US Science and Technology development since WWII
- To be able to understand and suggest rational improvements for the US STEM labor pipeline
- To gain a critical understanding of S&T comparative advantage and its implication for economic innovation

Text: Science and American Foreign Relations Since World War II, Greg Whitesides 2019 Cambridge University Press. In Bookstore.

Additional Reading Material: Assigned weekly on Canvas and the Padlet Board

GRADING:

This is an undergraduate online synchronous class with an active learning component and online content in addition to our class time. This means that you will each interact with the learning material partly on your own and at your convenience but that you will also be expected to interact actively with me and your fellow students about the learning outcomes using our synchronous class time and the Class Canvas Site. All synchronous meetings (on Zoom) will be used for discussion, Q&A, and scenario exercises.

Active class participation is expected and will count significantly toward the final grade.

Weekly written homework will be your Canvas-submitted response to a study question posted to one of the class discussion boards weekly. You will post your responses and any statement of fact must be cited appropriately in your response.

Additional reading homework will be assigned via Canvas.

A mid-term exam will be an approximately 5-page (double-spaced 12 font, inclusive of citations) essay to be answered without collaboration or the lifting from the Internet and submitted via Canvas. The final exam will be similar. The topics for these exams will be made available approximately two weeks before the essays are due. You must cite all statements of fact in your essays, and I would prefer sources other than Wikipedia.

Deliverables with grade value:

10% Homework, 10% class participation, 30% midterm exam, 50% final exam.

AI USE POLICY:

You may use Generative AI Models in all of your deliverables, BUT if you do, the content from the AI MUST be highlighted in yellow and you must reveal the prompt used to provide the content.

ACADEMIC INTEGRITY

GMU is an Honor Code university; please see the University Catalog for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.

GMU EMAIL ACCOUNTS

Students must use their Mason email accounts to receive important University information, including messages related to this class. See <http://masonlive.gmu.edu> for more information.

OFFICE OF DISABILITY SERVICES

If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Services (ODS) at 993-2474. All academic accommodations must be arranged through the ODS. <http://ods.gmu.edu>

OTHER USEFUL CAMPUS RESOURCES:

WRITING CENTER:

A114 Robinson Hall; (703) 993-1200

[Visit the Writing Center website](#)

UNIVERSITY LIBRARIES

["Ask a Librarian"](#)

COUNSELING AND PSYCHOLOGICAL SERVICES (CAPS):

(703) 993-2380;

[View the Counseling and Psychological Services website](#)

UNIVERSITY POLICIES

The [University Catalog](#), is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available on the [University Policy website](#). All members of the university community are responsible for knowing and following established policies.

CLASS POLICIES:

- *Collaboration between students is encouraged except on written assignments, mid-term essay and final exam paper.*
- *For all in-person communication, we will use Zoom and I will execute and manage the Zoom session.*

Academic Standards

Academic Standards exist to promote authentic scholarship, support the institution's goal of maintaining high standards of academic excellence, and encourage continued ethical behavior of faculty and students to cultivate an educational community which values integrity and produces graduates who carry this commitment forward into professional practice.

As members of the George Mason University community, we are committed to fostering an environment of trust, respect, and scholarly excellence. Our academic standards are the foundation of this commitment, guiding our behavior and interactions within this academic community. The practices for implementing these standards adapt to modern practices, disciplinary contexts, and technological advancements. Our standards are embodied in our courses, policies, and scholarship, and are upheld in the following principles:

- **Honesty:** Providing accurate information in all academic endeavors, including communications, assignments, and examinations.
- **Acknowledgement:** Giving proper credit for all contributions to one's work. This involves the use of accurate citations and references for any ideas, words, or materials created by others in the style appropriate to the discipline. It also includes acknowledging shared authorship in group projects, coauthored pieces, and project reports.
- **Uniqueness of Work:** Ensuring that all submitted work is the result of one's own effort and is original, including free from self-plagiarism. This principle extends to written assignments, code, presentations, exams, and all other forms of academic work.

Violations of these standards—including but not limited to plagiarism, fabrication, and cheating—are taken seriously and will be addressed in accordance with university policies. [The process for reporting, investigating, and adjudicating violations is outlined in the university's procedures here.](#) Consequences of violations may include academic sanctions, disciplinary actions, and other measures necessary to uphold the integrity of our academic community.

The principles outlined in these academic standards reflect our collective commitment to upholding the highest standards of honesty, acknowledgement, and uniqueness of work. By adhering to these principles, we ensure the continued excellence and integrity of George Mason University's academic community.

Student responsibility:

Students are responsible for understanding how these general expectations regarding academic standards apply to each course, assignment, or exam they participate in; students should ask their instructor for clarification on any aspect that is not clear to them.

Accommodations for Students with Disabilities

Disability Services at George Mason University is committed to upholding the letter and spirit of the laws that ensure equal treatment of people with disabilities. Under the administration of University Life, Disability Services implements and coordinates reasonable accommodations and disability-related services that afford equal access to university programs and activities. Students can begin the registration process with Disability Services at any time during their enrollment at George Mason University. If you are seeking accommodations, please visit the [Disability Services website](#) for detailed information about the Disability Services registration process. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: ods@gmu.edu. Phone: (703) 993-2474.

Student responsibility:

Students are responsible for registering with Disability Services and communicating about their approved accommodations with their instructor in advance of any relevant class meeting, assignment, or exam.

FERPA and Use of GMU Email Addresses for Course Communication

The Family Educational Rights and Privacy Act (FERPA) governs the disclosure of education records for eligible students and is an essential aspect of any course. **Students must use their GMU email account** to receive important University information, including communications related to this class. Instructors will not respond to messages sent from or send messages regarding course content to a non-GMU email address.

Student responsibility:

Students are responsible for checking their GMU email regularly for course-related information, and/or ensuring that GMU email messages are forwarded to an account they do check.

Title IX Resources and Required Reporting

As a part of George Mason University's commitment to providing a safe and non-discriminatory learning, living, and working environment for all members of the University community, the University does not discriminate on the basis of sex or gender in any of its education or employment programs and activities. Accordingly, **all non-confidential employees, including your faculty member, have a legal requirement to report to the Title IX Coordinator, all relevant details obtained directly or indirectly about any incident of Prohibited Conduct** (such as sexual harassment, sexual assault, gender-based stalking, dating/domestic violence). Upon notifying the Title IX Coordinator of possible Prohibited Conduct, the Title IX Coordinator will assess the report and determine if outreach is required.

If outreach is required, the individual the report is about (the “Complainant”) will receive a communication, likely in the form of an email, offering that person the option to meet with a representative of the Title IX office.

For more information about non-confidential employees, resources, and Prohibited Conduct, please see University Policy 1202: [Sexual and Gender-Based Misconduct and Other Forms of Interpersonal Violence](#). Questions regarding Title IX can be directed to the Title IX Coordinator via email to TitleIX@gmu.edu, by phone at 703-993-8730, or in person on the Fairfax campus in Aquia 373.

Student opportunity:

If you prefer to speak to someone confidentially, please contact one of Mason’s confidential employees in [Student Support & Advocacy \(SSAC\)](#), Counseling and [Psychological Services \(CAPS\)](#), [Student Health Services \(SHS\)](#), and/or the [Office of the University Ombudsperson](#).

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