Course Change Request

New Course Proposal

Date Submitted: 09/05/25 12:08 pm

Viewing: COS 411 : Introduction to Science Policy

Last edit: 09/22/25 12:29 pm

Changes proposed by: lsolomo

In Workflow

1. **SC Curriculum Committee**
2. SC Assistant Dean
3. Assoc Provost-Undergraduate
4. Registrar-Courses
5. Banner

Are you completing this form on someone else's behalf?
No

Effective Term: Spring 2026

Subject Code: COS - College of Science

Course Number: 411

Bundled Courses:

Is this course replacing another course? Yes

Old Course Number:
COS 310 - Introduction to Science Policy

Equivalent Courses:

Catalog Title: Introduction to Science Policy

Banner Title: Introduction to Science Policy

Will section titles vary by semester? No

Credits: 3

Schedule Type: Lecture

Hours of Lecture or Seminar per week: 3

Repeatable: May be only taken once for credit, limited to 3 attempts (N3)

Max Allowable Credits: 9

Default Grade Mode: Undergraduate Regular

Recommended Prerequisite(s): None

Recommended Corequisite(s): None

Required Prerequisite(s) / Corequisite(s) (Updates only): None

Registrar's Office Use Only - Required Prerequisite(s)/Corequisite(s):

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?

Registration Restrictions (Updates only):

Registrar's Office Use Only - Registration Restrictions:

Field(s) of Study:

Class(es):

Level(s):

Degree(s):

School(s):

Catalog Description:	This course is an introduction to how science is used to inform governmental policy decisions and how policy impacts U.S. science. The course is intended for any STEM student with an interest in understanding or contributing to decision making at the federal and state level or joining the government to draft policies and legislation directly. Government policies affect all parts of society, including the scientific research enterprise. Reciprocally, science can be used to inform policy in myriad ways at different levels of government. Scientists' lack of familiarity with policy, and policymakers' lack of familiarity with science contributes to the longstanding gap between the production of scientific research and its perceived utility by decision-makers. This course will bridge this gap and provide new skills for scientists to contribute to this new field. Offered by College of Science. Limited to three attempts.
Justification:	What: Creating a new course. Why: We're updating and replacing COS 310 with COS 411 to meet the new Mason Apex requirements. This course is needed to bridge the gap between science and policy. It is the first step in an undergraduate minor program that we have built (and a cross-listed graduate certificate program).
Does this course cover material which crosses into another department?	No

Learning Outcomes:

At the completion of this course, students will be able to:

• Understand the theoretical framework of science-policy

• Compare and contrast the roles of the branches of government in science

• Explain how evidence-based policy is generated and compare different approaches

• Apply STEM knowledge and skills to policy

• Recognize and contrast competing societal values on decision-making

• Understand and identify ways that science can be used to address societally impactful questions and develop methods to implement these approaches

• Synthesize disparate information to produce a technically accurate, but concise and understandable briefing document for non-scientist audiences. This document will be presented and shared with congressional staff and possibly representatives themselves (from either federal or state govenrment).

• Integrate skills, abilities, theories, or methodologies gained across a Mason student's scientific and political undergraduate education to explore complex issues in original ways (Mason Apex Curriculum). The students will be able to navigate the science-policy interface to identify new problems and solutions that incorporate tools from each of these disparate disciplines.

• Communicate effectively the results of the student's work with awareness of audience, purpose, and context using an appropriate modality (for example: written, oral, visual, material, embodied, multimodal). Students will be able to combine scientific and policy concepts to address a current issue or question in society today. The student will gain an awareness of their audience (congressional staff and society at large), purpose, and context using an appropriate modality (Mason Apex Curriculum).

Will this course be scheduled as a cross-level cross listed section? Yes

Please use the Additional Attachments button to attach two syllabi for review, one undergraduate and one graduate, preferably as separate documents. These should be provided in order to demonstrate the difference in expectations and assessments for undergraduates and graduates taking the course.

Attach Syllabus Fall 2025 COS 411 Syllabus.pdf

Additional Attachments

Staffing:

3 professors can teach this. Currently it is run by Lee Solomon (Chemistry). It is co-run by Jennifer Salerno (Environmental Science and Policy), and has been assisted two times by Jessica Rosenberg (Physics)

Relationship to Existing Programs: This is the first couse in an interdisciplinary program to teach students from all STEM backgrounds/majors about science policy. It is the foundational course for this minor and serves as a basic course on civics for our students.

Relationship to Existing Courses: This is a proposal to renumber COS 310, therefore it will have similarities to that course. No other course I am aware of as I write this is similar to this course

Have you reached out to the Libraries to determine whether there are adequate resources to support your course? If not, please email Meg Meiman, Associate University Librarian for Learning, Research, and Engagement at mmeiman2@gmu.edu.

No

Additional Comments: This course meets the Mason Apex criteria and will serve as an Apex course.

Reviewer Comments

Key: 19087

COS 411: Introduction to Science Policy
Fall 2025

Lecture time: Fall 2025 (15 weeks)
Wednesday 10:30 AM to 1:10 PM
Innovation Hall, Room 338
In-Person Modality, Face-to-Face classes

Note, this class may involve a trip to Washington, D.C. once during the semester.

Course Instructors:
Jennifer Salerno; jsalerno@gmu.edu
Lee Solomon; lsolomo@gmu.edu

Office Hours: Wednesday 2:00 PM – 3:00 PM or, by appointment

Required Textbook(s) and readings:

1. Beyond Sputnik: U.S. Science Policy in the 21st Century, by Neal, Smith, and McCormick (referred to in this document as NSM)
2. *Using Science as Evidence in Public Policy* (National Research Council, 2012).
3. Additional readings as assigned

***Additional course information, readings, and assignments will be posted on the course Blackboard site**

Course description and learning outcomes:
This course will introduce core topics on the structure and function of science and technology-related bodies in the U.S. government, and how science is used to inform policy decisions. This course will produce scientists who can capably contribute to decision making at the federal and state level, or join the government to draft policies and legislation directly. It is intended for all STEM students to incorporate the skills and knowledge needed to make meaningful contributions in a new environment quickly. Government policies affect all parts of society, including the scientific research enterprise. Reciprocally, science can be used to inform policy in myriad ways at different levels of government. Scientists' lack of familiarity with policy, and policymakers' lack of familiarity with science contributes to the longstanding gap between the production of scientific research and its perceived utility by decision-makers. Our course will bridge this gap and provide new skills for scientists to contribute to this new field.

This course is part of the Mason Core curriculum and fulfills requirements for Mason Apex.

At the completion of this course, students will be able to:

- Understand the theoretical framework of science-policy
- Compare and contrast the roles of the branches of government in science
- Explain how evidence-based policy is generated and compare different approaches

- Apply STEM knowledge and skills to policy
- Recognize and contrast competing societal values on decision-making
- Understand and identify ways that science can be used to address societally impactful questions and develop methods to implement these approaches
- Synthesize disparate information to produce a technically accurate, but concise and understandable briefing document for non-scientist audiences
- Integrate skills, abilities, theories, or methodologies gained across a Mason student's undergraduate education to explore complex issues in original ways (Mason Apex Curriculum).
- Communicate effectively the results of the student's work with awareness of audience, purpose, and context using an appropriate modality (Mason Apex Curriculum).

Academic Standards and University Policies
Students must abide by the all common university policies, which can be found at this link: https://stearnscenter.gmu.edu/wp-content/uploads/25-Common-GMU-Syllabus-Policies.pdf

Basic Course Technology Requirements
Activities and assignments in this course will regularly use the Blackboard learning system (https://mymason.gmu.edu) as well as web-conferencing software (Blackboard Collaborate / Zoom). Therefore, a desktop or laptop computer with a functional camera, microphone, and reliable internet access (consistent 1.5 megabits per second download speed or higher) are required to participate in this course. In an emergency, students can connect through a telephone call, but video connection is the expected norm.

Student Use of Electronic Devices
Please be respectful of your peers and your instructor and do not engage in activities that are unrelated to the class during synchronous meeting times.

Course Recordings
All of our synchronous meetings in this class will be recorded to provide necessary information for students in this class. Recordings will be stored on Blackboard and will only be accessible to students taking this course during this semester.

Class and Assignment AI Policy
AI Use: Students may use Generative AI tools whenever they believe it would be useful to their learning of course material. Students will be directed if and when citation or a statement-of-usage is required. All academic standards violations will be reported using the Academic Standards Referral Form.
Transparency: Student work will not be submitted through originality detection software focused on AI tools because the utilization of these types of tools is expected..
Potential Expansion: Although you are unrestricted with your use of Generative AI tools, you will be responsible for any incorrect, biased, or unethical information that is submitted, and your assignment grade will reflect the inclusion of any material that is incorrect or offensive.
Discipline- or course-specific addendum: The use of these tools will likely be very commonplace in the policy field, as governmental staff have to acquire expert-level knowledge from several disparate fields quickly. Being active in science policy requires you to gain experience in the ethical and efficient use of

these tools. Similarly, learning where these tools fail and understanding how to fact-check them will help you professionally when you leave the university.

Grading:

	Undergrad
Weekly Assignments	10%
Exam 1	10%
Exam 2	10%
Congressional visit material	25%
Final Project (2 parts)	20%
Debate Participation	10%
Participation	15%
Total	100%

Grading Scale
Plus and minus grades are assigned (A+, A, A-), however, an absolute grading scale will not be determined until all scores have been compiled and evaluated. As a general rule, the following scale will be followed: 100= A+, 93-99.9=A, 90-92.5=A-, 87-89.5=B+, 83-86.5=B, 80-82.5=B-, 77-80=C+, 73-76.5=C, 70-72.5=C-, 60-69=D, below 60=F. Note this scale is unofficial and is here for your planning purposes.

Late Assignments:
Late assignments will not be accepted without prior approval.

Participation and Attendance:
This class is going to depend heavily on your involvement. While some of the readings will be assigned to everyone, you will be responsible for reading up on science policy issues and sharing what you have learned with the class. It is largely a discussion-based class so attendance is absolutely necessary. The assignments will also be collaborations with your peers so you will need to attend, to be involved, and a portion of your grade will depend on your participation.

All written assignments must use the following style unless otherwise noted:

- **Arial Font, sized 11 with**
- **1-inch margins**
- **Single-space lines**
- **Name in Header**

Weekly Assignments:
Weekly assignments will be posted on Canvas. The overview of assignments is included at the bottom of this document but you will need to watch Canvas regularly for updates to the reading and the assignments. These assignments will be designed to prepare you to discuss issues in science policy since this should be more of a discussion course than a lecture course.

Exams:

Exams will consist of approximately 5 short answer written questions that will be pulled from the lecture material.

Congressional Hearing report:
Attend or watch a congressional hearing and report on it (more on this later). This will count as on homework assignment.

Policy discussion:
You will get background information and prepare documents on science policy issues for both your Congressional visits and for your final project. As a group you will lead a class discussion on the issue that you have been working on.

Policy Debates:
The class will be broken into three teams to debate a policy issue of the day. Two teams will debate the issue and the third team will be the judge of whose arguments were more convincing. There will be three of these over the course of the semester so each team will debate twice and judge once.

- All team members must contribute to the debate
- Judging team must engage with debaters with follow-on questions and
- Winning team will be awarded extra points (1 per student) toward final grade, however, losing team will not have points deducted from final grade

Congressional Visit Assignment:
One of the assignments is to visit with one of your representatives (or their staff) during the semester. There are several pieces to this project:

- Identify key issues what you want to discuss with your representative
- To the best of your ability determine where the representative stands on those issues
- Make an appointment with your representative
- Write a 3-page paper detailing your issue (delivered to Dr. Solomon)
- Make a powerpoint to explain the issue (to be presented to the class and possibly your representative)
- Write a one-pager that can be left with the representative after your visit
- Visit with your representative to discuss your issue(s) (you will probably do this in pairs or possibly even in groups of 3)
- After your visit is complete, write a report that discusses what you learned about your representative before the visit, a description of the visit, and you analysis about how to best continue working with this representative. If you witnessed other student's visits, contrast your experience with theirs.

<u>Deliverables:</u>
Long Form Policy Research Paper (3-pages):
You will write a three-page policy memo on your topic of choice. It must contain the following information:

- What your key issue is
    - Relevance to current issues

    - We will be meeting with a congressional representative or senator staffer, so include as much information as possible about how this issue affects their district
- What is currently being done to address it (if anything)
- What are the gaps in the current approach
- What legislation (if any) is currently implemented to address this issue
    - If no legislation, are there any other executive branch policies or have there been congressional hearings on the issue?
- What other bills (if any) have been introduced or are otherwise in process that you believe will address this issue
    - How will this bill help?
    - Who are the authors of the bill
    - If it was introduced previously, where did it end up and why?
- What is your action item for a member of congress to do?
    - I recommend (though do not require) asking a member to support/reject a bill that would address your main topic
    - How would their support help this issue
        - Are they on a relevant committee?
        - Is it relevant to their district
- Must include thorough references to support your key points!

PowerPoint Presentation (Minimum 5-slides, 10 minutes)
You will be presenting the information above to your class (and you may possibly want to present it to your congressional representative as well). Slides must contain all the information requested above, but should be more easily digestible for a congressional staffer to get the point quickly and effectively.

One-pager (1-page):
This will be a one-page summary of your three-page research paper. The intent for this document it to leave with the congressional staff so they can use it for follow up advocacy or references. There are resources on Blackboard for putting together a one pager for your representative. We will discuss what you put together in class before your visit.

Note: This can also be applied toward your final project materials

Post-Congressional visit write-up (1-page):
This write-up should contain information about your representative and his or her positions on issues that are related to the issues you discussed with them. It should also describe your visit and the next steps you will take in working with your representative on these issues. If you witnessed another student's visit, compare and contrast your experiences. What did you learn, and how would you incorporate that into your memo/visit? What advice would you give them about their experience if you're to do it again?

Final Project:
The final project will be done in groups and be a 3-part project.

Part I: Intra-office memo on policy issue (8%)

- Detailed background information on the science and the policy associated with the issue

- Detailed stakeholder analysis that includes counterarguments for opponents
  - Note that for this you will probably have to reach out to stakeholders to figure out their interests
- Discussion of the end goal and a plan for how to get there (i.e., legislation, role changes, treaties, advocacy, etc)

Part II: Follow your proposed plan of action (8%)

- Op-ed on topic (I would like each group to write one of these)
- The other pieces will depend on the plan from part one but might include:
  - Draft legislation
  - Rules change suggestions
  - Advocacy materials/ outreach to stakeholders

Part III: Presentation to Class (4%)

- The information above will be presented to the class as a powerpoint
- Must include all of the material from your memo and proposed plan of action in a presentable form
- Minimum of 15 minute presentation (no slide number minimum).

Course Calendar

Week	Date	Reading	Assignments Due on the day in the box	Topics	Activities
1	Aug 27	**NSM chapter 1** "Science Policy Defined"		Introduction – Science for policy and policy for science	Introductions, Motivations, and Course expectations
		NSM Chapter 2 Endless Frontier Summary "U.S. Science Policy Before and After *Sputnik*"		History of science policy	Group project time I: Description and Potential Topics
2	Sept 3	**NSM Chapter 5** "Federal Funding for Research:	Watch the Congressional hearing and find	Federal grants	Policy Discussion: Discuss

		Rationale, Impact, and Trends”	the related bill		Hearing and your bill
3	Sep 10	**NSM Chapter 3** “The Players in Science Policy”	Homework: Submit project topic selection and short description	Federal Agencies, U.S. Congress, and Judicial Branch	Policy Debate Number 1
4	Sep 17	**NSM Chapter 4** “The Process of Making Science Policy”	Homework: Locate a science-related bill of interest on congress.gov	The legislative process, the Federal budget process	In-class budget activity Policy Discussion 1 (Bill from Homework)
5	Sep 24	**NSM Chapters 6 and 7** “Federal Partners in the Conduct of Science” Part I	Homework: Research and presentation on assigned federal laboratories	Universities and Federal laboratories	Student presentations
6	Oct 1	**NSM Chapters 8 - 10** “Federal Partners in the Conduct of Science” Part II	Homework: Present article about current state of AI	Industry, the states, and the public	Exam 1 Policy Discussion (AI Article)
7	Oct 8	**NSM Chapter 11 and 18** “Science for National Defense” and “Science and Homeland Security”	Homework: Have completed rough draft of memo	Science for National Defense and Homeland Security Introduction to LIGO	Present written part of draft memo Part I
8	Oct 15	**NSM Chapter 12** “Big Science”	Homework: Watch recorded interview	Big Science	Policy Debate Number 2

9	Oct 22	**NSM Chapter 15** "Science Technology Engineering and Mathematics Education"	Homework: Research Initiatives and presentation	History of STEM Education	Group project work session Memo Elevator speech Part I Policy Discussion
10	Oct 29	**NSM Chapter 17** "Globalization and Science Policy"	Homework: Read and summarize the article from Science Diplomacy	Globalization and Science Policy and Science Diplomacy	Science diplomacy International negotiation exercise
11	Nov 5	Congressional Visits			
12	Nov 12	Congressional Visit Reports	Write up report	Debrief class on Congressional Visit	Policy Debate Number 3
13	Nov 19	Final Memo and Op-Ed Presentations			Exam 2
14	Nov 26	Thanksgiving	NO CLASS	NO CLASS	NO CLASS
15	Dec 3	Final Memo and Op-Ed Presentations and Graduate Presentations			