

## Course Syllabus for Physics 320a Science and Public Policy

**Class meeting times:** Lecture MW (1:00-2:15)

**Requirements fulfilled:** WR (Writing) or SO (Social Sciences)

**Instructor:**

Professor Sarah Demers

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Professor Bonnie Fleming

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**Teaching Fellows:**

Emily Kuhn ([emily.kuhn@yale.edu](mailto:emily.kuhn@yale.edu))

Talia Weiss ([talia.weiss@yale.edu](mailto:talia.weiss@yale.edu))

**Course Writing Partner**

Chloe Jensen will be our Course Writing Partner. Chloe is available to discuss any writing you do in this course (draft not required). Email her at [chloe.jensen@yale.edu](mailto:chloe.jensen@yale.edu) to set up an appointment, and she'll respond with a Zoom link where you can meet to discuss your work.

**Course Description:** Science is driven by innovation and discovery yet subject to the constraints of government, the public, and policy. This lecture course is designed to give students an overview of US Science and Public policy. Topics to be explored include the players in crafting science policy in Congress, at the state level, in industry, in academia, and the public. We will also explore how science is funded, big science, climate science, and globalization as well as Science and National Defense. Students will gain an appreciation of the relationship between government, industry, academia, and science policy. Focus on timely issues is a hallmark of this course including Diversity and Inclusion in Science, and the COVID19 global pandemic.

The course will include a number of guest lecturers from across academia, industry, government, and the media.

No detailed background in mathematics or physical science is required.

Format:

The course will follow Yale's "residential remote" learning model with lectures and discussion sections on zoom.

The course will use the book

**"Beyond Sputnik: US Science Policy in the Twenty-First Century"**

to be coupled with selective readings in science policy including:

**"Science: The Endless Frontier" A Report to the President by Vannevar Bush,  
Director of the Office of Scientific Research and Development, July 1945.**

<http://www.nsf.gov/od/lpa/nsf50/vbush1945.htm>

Additional selective readings may be introduced during the semester. In addition to the reading, there will be a number of guest lecturers covering topics across science policy.

Students will be required to write three 1-2 page brief memos and one 10-20 page research paper. The three memos will be on approved topics in relevant science policy format. For example, a memo could mimic a brief as it would be written by a Congressional Science staffer to his/her Congressperson analyzing a policy issue and making a policy recommendation. Examples of good policy memos will be discussed in class both before and after the assignment.

The final 10-20 page research paper will be on an approved topic of your choice, related to science policy. At the end of the course, students will present their research paper in a short talk to the class. These talks will be scheduled according to discussion section.

Grading will be based on class and discussion section participation (20%), the three policy memos (45%) and the Research paper (35%). The policy memos component of the grade (45%) will be worth 10%/17.5%/17.5% of the grade, where the lowest scored memo will account for the 10% component.

Late Assignments will be marked a grade lower for every day they are late unless arrangements have been made in advance.

Attendance is required in discussion sections. Attendance during class is strongly encouraged so much so that if you attend at least 22 of the lectures, you will get a bonus of 3% on your grade. We will note attendance in class.

## Class Schedule

Date	Readings/HW	Concepts	Guest Speaker
<i>Section 1: Overview of US Science Policy</i>			
August 31	Intro	Course Overview and Plan. What is Science Policy? Science Policy Memos	
September 2	Chapter 1 and Science: The Endless Frontier, Vannevar Bush	US Science Policy past and present I	<b>Kayla Bohemier</b> (30 min)
September 7	Chapter 2 and Science: The Endless Frontier, Vannevar Bush	US Science Policy past and present II	
September 9	Chapter 3	Who Crafts US Science Policy?	
September 14		Policy Research	<b>Leland Cogliani</b>
September 16	Chapter 4	How is Science policy made?	<b>France Cordova</b>
September 21	Chapter 5	Federal funding for research	
<i>Section 2: Federal Partners in the Conduct of Science</i>			
September 23		Overview of Section 2 and discussion of Policy Memos	
September 25	Memo 1 due at midnight		
September 28	Chapter 6	Federal Laboratories	
September 30	Chapter 7	Universities	<b>Carl Zimmer</b>
October 5	Chapter 8	The Public	
October 7	Chapter 9	Industry	<b>Herman White</b>
October 12	Chapter 10	The states	
October 14	Review/catch-up		
<i>Section 3: Science Policy Issues in the Post Sputnik Era</i>			
<i>Section 4: Science Policy in an Era of Increased Globalization</i>			
October 19		Overview of Sections 3 and 4	<b>Meg Urry</b>
October 21	Chapter 11, 13	Scientific Infrastructure and Science for National Defense	
October 23	Memo 2 due at midnight		

October 26	Chapter 14	Ethics and Integrity and impact on Science Policy	<b>Albert Ko</b>
October 28	Chapter 15	Science and the Media	<b>Katie Yurkewicz</b>
November 2	Chapter 16	Science and Engineering workforce	
November 4	Chapter 17	Globalization and Science Policy	
November 9		Grand Challenges for Science and Society	<b>Susan Biniaz</b>
November 11	Chapter 18	Big Science	<b>Yangyang Chang</b>
November 13	Memo #3 due at midnight		
November 16	Chapter 19	The Nations Future in Science and Science Policy	
November 18	Chapter 20	Science and Homeland Security	
November 21-29	Thanksgiving Break	(Overview of class and Case Study review)	
November 30	Presentation of Student Papers		
December 2	Presentations of Student papers		