

**Science, Engineering, and Public Policy**  
**PUBAFR 5600 (6329/28752)**  
**Spring 2014**

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*John Glenn School:*     *Engineering (CEG):*  
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P: 614-688-2113     P: 614-688-2131  
OH: (tentative)     OH: (tentative)  
Mon. 4:00-5:00     Wed. 4:00-5:00

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**Course Description**

Science and technology underpin innovation, national security, health care and many other areas of public concern. Yet, decisions about national investments in science, engineering, and public policy are made by secular policymakers, many of whom do not have technical training and some who lack an appreciation of the role of government in this sphere. Scientists and engineers who depend upon government funding can be empowered by understanding the process of national investment and support for research universities. On the flip side, public sector leaders need to understand how to use



scientific and technical information for decision making, since many fields require technical information to make decisions (e.g., climate change, information technology, space exploration). This course is designed to serve both perspectives—those making policy for science and those using science to inform policy—with a survey of science, technology (engineering), and innovation policy and decision making in the United States. The class will present

the history of science policy in the United States, inquire into how various agencies of government conduct and pay for research and development, ask how budgeting decisions are made, and explore how public sector interests and processes have changed with globalization. Case studies in current issues will help students apply policy analysis tools to real-world problems.

## Learning Objectives

Through this course, you will:

- Examine and analyze the federal government's budgeting process for science, technology, and innovation and understand how that budget reflects public values, goals, and interests.
- Learn budget planning, assessment, evaluation, and public outreach skills for public sector administration and management systems in science and technology policy at federal and state levels.
- Synthesize the skills needed to become more effective grant seekers or managers in the public and nonprofit sectors in scientific, health, or engineering fields.
- Analyze public policy cases that involve public choice, risk, and consequences in fields related to Ohio State University's Discovery Themes and other current issues.

## Classroom Participation and Conduct

Advance reading and active participation are critical elements of success in this course (and in life). Lively and active classroom discussions are effective learning mechanisms for you and your peers (and thus incorporated into your class participation grade), so be prepared to contribute to the discussion during class. We want you to be engaged in the learning environment we will create, and it is important for each student to engage deeply and critically with the material. Consequently laptop computers, tablets, and other devices will not be allowed unless we specifically state that they may be used to look up some information related to class, or you use them to take notes. If you choose to use such a device to take notes, the wireless capabilities must be turned off (otherwise known as "Airplane Mode").<sup>1</sup> Similarly, mobile phones must be turned off, unless you are awaiting an important phone call (e.g., your expecting wife may be close to labor, the Chicago Cubs are about to win the World Series).<sup>2</sup> If you are expecting such a phone call, please tell us and we will be happy to let you have your phone on (in vibrate mode, please). We ask, and will enforce, respect for your colleagues during class discussion. Out of respect for your schedules and ours, class sessions will begin and end on time.

## Course Requirements

### *Textbook:*

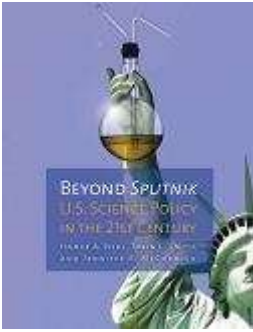
Students can access textbook information via the Barnes & Noble bookstore website: [www.shopOhioState.com](http://www.shopOhioState.com) as well as from their BuckeyeLink Student Center. This information is disseminated by B&N to all area bookstores. You may buy from a store of your choice and/or shop for books online. (Use ISBN# for searches.)

We encourage you to read broadly (New York Times, Scientific American), and bring relevant issues from current activities in public affairs to class to enhance our discussion. There is one required textbook for this course:

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<sup>1</sup> Recent changes to FAA policy have stated that you no longer need to turn these devices off during takeoff and landing.

<sup>2</sup> Please don't test us... We have worked within the federal government and for U.S. National Laboratories, and still retain some privileges. We have certain resources at our disposal that are not available to the public... ©



Homer Neal, Tobin Smith, and Jennifer McCormick. [Beyond Sputnik: U.S. Science Policy in the Twenty-First Century](#). (Ann Arbor: University of Michigan Press, 2008) ISBN 0472033069  
<http://www.science-policy.net/>

In addition, you will find required readings posted to the Carmen website for this course.

**You are expected to read all of the readings prior to that week's class session.** You will be assessed on your ability to demonstrate knowledge of the material through their in-class contributions and other assignments. You are welcome to draw from material in other classes to support course work.

### *Assignments*

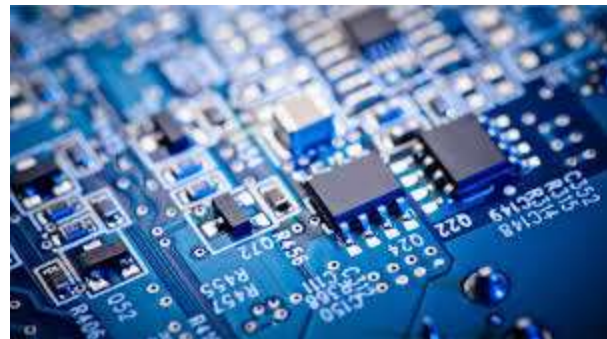
You will undertake a series of tasks throughout the semester. In addition to actively participating in the course, you will take a midterm exam, complete a term paper, and make a research-based presentation to the class.

### **Grading and Assignment Detail**

Class Participation:	20%
Midterm:	20%
Paper Proposal:	10%
Final Paper:	30%
Presentation	20%

### *Class Participation*

There are few things more important to success in public affairs (and life) than effective communication and developing the ability to conduct yourself in a way that ensures your message is clear and direct. This class will mix lectures, case studies, team work, and discussion; it is a laboratory for you to refine your communication skills. We expect you to be prepared, to thoroughly process information, and to synthesize it based on your experiences. In other words, you will need to be reading and thinking as we proceed through the semester. As a result, regular attendance and active participation are necessary. We expect that you will read assignments for class, and be prepared for class discussion. We recognize that everyone learns and participates in different ways, some of which may require more reflection than can occur during a class session. If this is the case, you have the opportunity take advantage of the discussions that will be posted on the Carmen discussion board.



Classroom attendance is expected. If you need to miss class, please email Dr. Wagner [wagner.911@osu.edu](mailto:wagner.911@osu.edu) before that day's lecture. Absences without prior notification will be taken into account when considering your class participation grade. Also, if we have a guest attending class to guest lecture, we expect full attendance.

### *Exam and Final Paper*

You will have one mid-term exam during the semester. This exam will be given in class on March 6, and will be based on the reading material, class lectures, and discussion. The midterm accounts for 20% of your final grade and will cover material up to the exam date. The final paper due on April 28.

**There will be no make-up exam.** If you are absent from the mid-term exam (without prior permission of an instructor, in which case we will make accommodations for you to take the mid-term), the weight of that exam will be applied to the final paper. In other words, if you miss the mid-term exam and have not received permission to do so, your final paper will comprise 50% of your total grade.

### *Case Studies*

The class will study three cases of government policymaking in science and technology investment: 1) energy, 2) defense; and 3) space. Using multi-media sources, the class will examine the history and current problems facing the policymaking community, as well as the industry or general public, in the subject area. The case studies will include presentations by guest lecturers to the extent they are available. The case study method will be presented in class, and teams of students will meet during class to discuss the cases.

### *Final Paper*

Each student will submit his or her own final paper, or be part of a team paper. We will provide examples of topics that you may, but do not have to, choose. Your paper may present a policy issue, a case study, or a theoretical question about science and technology policy. Teams up to three students may work together, with 10-page papers by single authors, 17 pages by two authors, and 22 pages by three authors. Papers should be submitted in Times New Roman 12-point font, double-spaced, with 1-inch margins. You must have at least 12 external references to support your arguments, not including community-edited sources (e.g.: Wikipedia). The due date for the paper is April 28 at 12 midnight, to the Carmen dropbox. The paper must reflect your own approach and synthesis. The paper will be graded on substance, argument and style, reflective of the four objectives set out for the class (listed above), the paper requirements, and the basics of good writing<sup>3</sup>. A rubric detailing the grading criteria will be handed out in class.

### *Presentations*

On April 15, you or your team will make a presentation to the class on your paper. The presentation should be 10 minutes long (if you plan to use slides, this usually means no more than 10 slides).

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<sup>3</sup> See the University's Writing Center handouts for clarification on what constitutes good writing, found online at: <http://cstw.osu.edu/writingcenter/handouts>

A class lecture will focus on writing and presenting a good presentation. A rubric detailing the grading criteria for this portion of the deliverables will be handed out in class and it will be posted on Carmen.

### *Grading Scale*

95 – 100	A	80 - 82	B-	68 – 69	D+
91 – 95	A-	78 - 79	C+	64 – 67	D
86 - 90	B+	73 - 77	C	63 & below	E
82 - 85	B	70 - 72	C-		

### **Course Policies**

Academic and personal misconduct are defined and dealt with according to the procedures in the Code of Student Conduct located at the following link – [http://studentlife.osu.edu/pdfs/csc\\_12-31-07.pdf](http://studentlife.osu.edu/pdfs/csc_12-31-07.pdf). Your work should be original. Avoid excessive quotation and paraphrasing of other’s work with or without citation.

While timely indication of one’s intent to be absent is expected, when possible, this does not waive the obligation to submit assigned work on time. Late work will be accepted with a penalty of 10 points for each day that it is late and will not be accepted for a grade of any kind later than one week after the assigned due date.

### **ACADEMIC INTEGRITY (ACADEMIC MISCONDUCT)**

From: <http://oaa.osu.edu/coamfaqs.html#academicmisconductstatement>

The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University’s *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Failure to follow the rules and guidelines established in the University’s *Code of Student Conduct* may constitute “Academic Misconduct.” Sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

In the Ohio State University’s *Code of Student Conduct*, Section 3335-23-04 defines academic misconduct as: “Any activity that tends to compromise the academic integrity of the University, or subvert the educational process.” Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination.<sup>4</sup> Ignorance of the University’s *Code of Student Conduct* is never considered an “excuse” for academic misconduct. Other sources of information on academic misconduct (integrity) to which you can refer include

The Committee on Academic Misconduct web page: <http://oaa.osu.edu/coam.html>

*Ten Suggestions for Preserving Academic Integrity:*

<http://oaa.osu.edu/coamtensuggestions.html>

*Eight Cardinal Rules of Academic Integrity:* [www.northwestern.edu/uacc/8cards.html](http://www.northwestern.edu/uacc/8cards.html)

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<sup>4</sup> If you have read this, email Prof. Bielicki ([bielicki.2@osu.edu](mailto:bielicki.2@osu.edu)) with the subject line “I have read the syllabus”, and you will receive an extra percentage point on your final grade. P.S. don’t tell others about this. Let them find it (or not) on their own.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact the instructors.

## Disability Services

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 614-292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu/>

### Course Calendar:

Week	Date	Topic	Assignment
1	January 7	Introduction to U.S. Science, Technology, and Innovation Policy	Text, Chapter 1
	January 9		“Science: The Endless Frontier” on Carmen
2	January 14	U.S. Science Policy in the World: Leadership and Integration	Text, Chapter 2
	January 16		Text, Chapter 17
3	January 21	U.S. Science Policy-Makers and ‘Stakers’: Where is Policy Made?	Text, Chapter 3
	January 23		Text, Chapter 4
4	January 28	Conducting U.S. Science and Engineering Research	Text, Chapter 6
	January 30		Text, Chapter 8
5	February 4	Case Study: Energy Policy in the United States	Readings on Carmen
	February 6		Text, Chapter 7
6	February 11	Case Study: Defense Science Policy in the United States	Text, Chapter 11
	February 13		Readings on Carmen
7	February 18	Federal Funding and the Role of States	Text, Chapter 5
	February 20		Text, Chapter 9
8	February 25	Role of the States: Ohio’s 3 <sup>rd</sup> Frontier	Readings on Carmen
	February 27		
9	March 4	Discussion and Review	
	March 6	Mid-Term Exam	
10	March 11	Spring Break	Relax and Have Fun
	March 13		
11	March 18	Case Study: U.S. Space Policy	Text, Chapter 12
	March 20		Readings on Carmen
12	March 25	Ethics, Integrity, and Fraud in STI Research	Text, Chapter 14
	March 27		Reading on Carmen
13	April 1	Case Study: Biotechnology	Text, Chapter 18
	April 3		Readings on Carmen
14	April 8	Grand Challenges (including how to give effective presentations)	Text, Chapter 19
	April 10		Text, Chapter 20
15	April 15	Student Presentations	
	April 17		
16	April 22	<i>Instructors available for consultations on papers by appointment</i>	
	April 28		Final Paper Due