Required texts:
- Course Reader, available only at Alphagraphics (815 W. University Dr.)
- Other readings posted on class Blackboard site, *as indicated in reading list with an asterisk*

Schedule Overview:

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<td>Technology and Social Transformation</td>
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<td><em>Final Project Presentations</em></td>
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<td>TBA</td>
<td>Final</td>
<td>3-hour timed final exam TBA</td>
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Course Readings

Class 1 – January 13: **Introduction, Background, Expectations**


Class 2 – January 20: **Technology and Social Transformation**


Class 3 – January 27: **Technology**

**Guest: Jamey Wetmore**


Class 4 – February 3:  Science


Class 5– February 10:  Roots of U.S. Science and Technology Policy

Guest: G. Pascal (“Gregg”) Zachary


Class 6—February 17:  Theories of Science Policy


**Class 7 – February 24: US Science Policy and Politics: More Than Just the R&D Budget?**


**Class 8 – March 2: Science and Technology**


PLEASE PURCHASE THIS BOOK.

Read:
Chapter 1, "Stating the problem," p. 1-25;
Chapter 2, "The rise of the modern paradigm," p. 34-45 **only**;
Chapter 3, "Transforming the paradigm," p. 58-89.


**SPRING BREAK—March 9**

**Class 9 – March 16: Technology and Innovation**


Class 10 – March 23: Innovation Systems and Innovation Policies


Class 11 – March 30: Issues in Science and Technology Policy: S&T Workforce, Innovation, and Jobs


Class 12– April 6: Issues in Science and Technology Policy: Responsible Innovation

Guest: Cynthia Selin


Class 13 – April 13: Issues in S&T: The Role of Universities in the R & D Policy Process


Class 14 – April 20: Issues in Science and Technology Policy: Making Humans Better
Guest: Heather Ross and Denise Baker


Class 15 – April 27: Final Project Presentations
Project 2 Due Today

* Article posted on Blackboard
Instructors: Michael Crow; Daniel Sarewitz
TAs: Denise Baker and Heather Ross
Time: Wednesdays, 7:30am - 10:15am
Location: Fulton Center, 4th Floor Board Room 4440

Contact Information

Dan Sarewitz: Appts. on request, via phone, video-conference, Skype, or after class.
Email: dsarewitz@asu.edu
Skype: dsarewitz
Tel: (202) 446-0384

Michael Crow: Appts. on request, Fulton Center - President’s office
Email: Tel: (480) 965-8972

TA: Denise Baker: Appts. on request, Interdisciplinary B, Room 366 or CLCC Room 118
Email: d.baker@asu.edu
Skype: dtccbaker or Google Hangout: dabaker99@gmail.com
Tel: (480) 707-1049

TA: Heather M. Ross: Appts. on request, SFIS - Interdisciplinary B, Room 366
Email: hmross1@asu.edu
Skype: heatherinpv
Tel: (480) 993-6081

Course Description

This class will explore the political, economic, cultural, and moral foundations of science and technology governance, with a focus on the United States. Science and technology are the most powerful transforming forces in the world today. We will investigate, from a variety of perspectives, the ways in which these transforming forces are influenced by decisions that humans make about priorities, organization, direction, and rate of advance of scientific knowledge and technological innovation.
Course Requirements

Readings: The course readers are available at Alphagraphics (815 W. University Dr., Suite #101, Tempe, AZ 85281, (480) 907-3995). You must also buy one book, Pasteur’s Quadrant by Donald Stokes. Additional readings (indicated on the syllabus by asterisks) are on the class blackboard site. Several videos are also assigned; URLs are provided in the syllabus.

Class attendance is required. We expect you to carefully read all assigned materials (from the course reader, required books, and blackboard site) prior to each class and come prepared to discuss them. We will occasionally send, by email, additional relevant readings prior to class throughout the semester. Many weeks, it may take you 5 hours or more to complete the reading assignment with adequate critical attention. Plan ahead!

Participation: Classes will be centered around discussion of the issues and themes raised in the readings. All students are expected to participate in class discussions.

Projects: We will pair you with another student to work on a semester-long project, as described below. The project - a significant part of your work for this course - is aimed at applying the breadth of ideas explored in the class to an in-depth exploration of a particular technology or class of technology.

Presentations:
1. In week two, each student team (two students) will be assigned one reading from week two (White, Noble, or Shapiro) to evaluate from a complex systems perspective. Each team will create a visual map depicting 1) the technology; 2) the historical and societal factors influencing it; and 3) its influences in and on society. The map must be submitted to Denise and Heather by email as an image file or PowerPoint slide no later than 8 pm on the evening prior to the week three class. Maps will be presented and compared during class in week three. Please refer to BlackBoard for references related to mind maps.

2. Starting in week five, and continuing through week fourteen, at the beginning of each class 2-3 groups will give a 1-2 minute presentation about the work they have been doing on their technology. The presentation should include 1) a visual map of the influences on and of the technology that you have uncovered to date (obviously this map will grow and become more complex throughout the semester); and 2) a discussion of what you’ve been learning about the technology especially in the context of the themes and issues raised in the previous week’s readings. You may wish to use a few slides to support your presentation. Slides must be submitted to Heather and Denise by email no later than 8 pm on the day prior to the presentation. Your group will be giving three presentations through the course of the semester, and these will give you the
opportunity to explain and focus what you have been learning about your technology, and to receive critical feedback from the class.

3. The final class will be devoted entirely to student project presentations of the results of the project. Additional information about the project presentations will be provided during the semester.

Exam: There will be a comprehensive final exam that will test your mastery of the readings and concepts covered during the semester.

Grading:

<table>
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<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Final Exam</td>
<td>35%</td>
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<tr>
<td>Project including presentation</td>
<td>50%</td>
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<tr>
<td>Participation</td>
<td>15%</td>
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Class Project Description

Technology Assessment and Policy Plan paper
Draft Due: Class 9
Final Paper Due: Class 15 (final class)
Maximum 10,000 words/about 25 double-space pages (plus bibliography and figures)

Class projects will focus on a technology assigned by week 2 of the semester. Projects will be completed by student groups to be assigned. This project will include a comprehensive assessment of the socio-economic and policy context for your assigned technology. The paper should include: 1) a very brief (1-page) description of the current state of the technology itself; 2) a discussion of the historical development of the technology with a focus on the socio-economic and policy factors that influence the technology’s evolution and role in society; 3) an analysis of the present socio-economic and policy context for the technology; 4) a summary of the future societal consequences (benefits and problems) predicted for this technology by its supporters and opponents; and 5) an assessment of the potential positive and negative outcomes of the technology; 6) policy recommendations to achieve one or more of the societal benefits you identified in 5) above; and 7) an actionable plan to implement your policy recommendations in relevant governmental or organizational contexts. The paper should also include a final version of the visual map that graphically depicts the complex sociotechnological context in which the technology is now situated. We will provide more detailed instructions on this project, including a list of generic questions to guide each group’s thinking, in class.

We expect groups to begin research for this paper at the start of the semester and to become experts in their chosen topic, exploring all available resources, from scholarly papers to government reports to websites and media coverage. We expect the content of the papers to go
far beyond what is asked in the questions, but all papers must, at a minimum, address the questions. Please keep in mind that WE DO NOT WANT A TECHNICAL DISCUSSION OF THE TECHNOLOGY (although some presentation of the relevant science and engineering will likely be necessary and valuable). Rather, we want a comprehensive assessment of the social, political, and economic contexts that have shaped, and will continue to shape, the technology, and their implications for the future, along with policy plan(s) to address that future.

HARD COPIES OF THE DRAFT AND FINAL VERSIONS OF THE PAPER SHOULD BE BROUGHT TO CLASS ON THE DUE DATES (class 9 and 15 respectively). An electronic copy should also be emailed to Mike, Dan, Denise and Heather prior to class. The preferred format is Microsoft Word, DOUBLE SPACED AND PAGINATED, 12 point font, 1-inch margins. Word count requirements do not include references, figures, tables and appendices. Please use MLA or APA style to format your papers, including references and appendices.

Class Policies

Proper Attribution: We expect a full commitment to ethical standards of scholarship in all written materials for this class. All research papers should properly reference their source material. Appropriate attribution of material is critical in all academic writing. General guidelines include:

• If the text you are writing has 3 or more important words consecutively taken from a source, you must use quotation marks around that text AND cite that source and its page number.
• If the text you are writing makes a specific and not commonly known point that is derived from a source, you must cite the source. Paraphrasing, no matter the source, requires citation.
• If the text you are writing makes a point, even a specific one, that is commonly known (e.g., you could find that same point in several different sources), you do not need to cite that source. But you still must cite the source if you are using its own language to make the point.
• These rules apply equally to any material drawn from online sources.
• While full, formal citations will not be required for the final exam, the same rules generally apply in that quoted material must be indicated, and sources provided for ideas that are not your own.

There are two important reasons for rules for attribution. One is, again, to help your reader find anything he or she might want to pursue in greater detail. The other is to give credit where credit is due. Just because something is on the web or "in public domain" does not relieve the responsibility of providing appropriate attribution. Attribution is not about the legalities of copyright - it is about the integrity of scholarship.

With regard to the style and grammar, your writing should above all, be clear and correct. Aim for clarity first and elegance later. If you have question about grammar and style, please consult the Writing Center, which has a set of handouts that are very helpful (http://studentsuccess.asu.edu/resources/students). You should be absolutely sure to proofread
your final version at least twice - do not rely on you word processor's spell check, as there is more to good grammar and good style (and, indeed, good spelling) than spell check.

**Class Absence:** Any absence due to religious observances/practices or university sanctioned events/activities will be excused. Students can make-up assigned work or tests from excused absences without penalty. Please contact us before a class absence.

**Classroom behavior:** We expect students to refrain from using electronic communication devices during class for purposes unrelated to class. Recording devices are prohibited. Our policy on threatening behavior is consistent with ASU Policy SSM 104-02.

**Student Academic Integrity:** Students are required to adhere to the policy on student conduct identified in the ASU Student Academic Integrity Policy and the Arizona Board of Regents Policy Manual. Academic integrity and honesty is expected of all students at Arizona State University, and is so stated in the ASU Student Code of Conduct (available at http://www.asu.edu/studentaffairs/studentlife/judicial/). Plagiarism or cheating can result in the grade of "XE". The XE grade denotes failure through academic dishonesty. Students are responsible for understanding these policies and following proper academic research and citation protocol.

**Incomplete Policies:** According to University grading polices (https://students.asu.edu/grades), a grade of "I" (incomplete) may be given by an instructor when a student is otherwise doing acceptable work but is unable to complete the course because of illness or other conditions beyond their control. Incompletes must be completed within a calendar year; after that, the “I” changes to an “E”. The student must complete Request for Incomplete Form, and deadlines must be set with the instructor for the completion of the work.

**Disability accommodation:** Students with disabilities who need accommodations in this class are encouraged to make their requests to course faculty at the beginning of the semester by appointment.  *Note: Prior to receiving disability accommodations, verification of eligibility from the Disability Resource Center (DRC) is required. Disability information is confidential.*

Students who feel they will need disability accommodations in this class but have not registered with the Disability Resource Center (DRC) should contact DRC immediately. The DRC has offices on all four campuses, and a single website https://eoss.asu.edu/drc, phone number (480) 965-1234, and e-mail drc@asu.edu for all sites.

**Title IX Statement:** Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at http://sexualviolenceprevention.asu.edu/faqs/students.