Science and technology are powerful forces in the modern world. They have been hailed as a way to address everything from world hunger to old age. This does not, however, happen automatically, nor does it always work out the way one presumes. Governments make numerous decisions that affect the direction and application of science and technology, and government policies are affected by a myriad of social, political, and cultural factors. This class will explore the variety of ways in which governments make these policies, how the policies shape the development of science and technology and their applications, and how policy may be shaped to create better futures. Governments around the world have coalesced around the idea that science and technology are necessary for the promotion of the good life. We will examine how they put this idea into action by looking at five interrelated topics: Food, Security/Military, Health, Economy, and Sustainability. We will look at the roots of government involvement in each of these areas, how governments address them now, and then look at what might be possible in the future.

Course Learning Objectives:
- Identify fundamentals of how science and technology policy functions in the United States, including how it affects the sectors outlined above.
- Recognize political and social contexts that influence these policies.
- Compare the U.S. with other countries to gain perspective on how science and technology policy can vary from country to country.
- Analyze and critique actual science and technology policies that can affect your lives.
- Evaluate media accounts of science and technology with a more knowledgeable perspective, and cultivate the ability to question and seek a broader context for the news you read.

Course requirements:
The primary components of the course will be the readings, lectures and films. There is no text book, and all of the readings are posted on our Blackboard site. The lectures will combine presentation of new ideas and examples with discussion of the readings and collective exploration of ideas and implications. The lectures are designed to be interactive and engaging, and in order to benefit from them, you will need to prepare. Simply reading the required articles is necessary but not nearly sufficient: you will also need to reflect on them. As part of this reflection, each week you will write up two questions that will help us to explore the readings, and every few weeks find one related current news item. These assignments will not be graded individually, but will be considered as part of your participation. Some of the questions or articles will be discussed each time. Attendance and participation in the lectures is worth 25% of your grade.

Your major academic work for the course will be three brief papers (of 3-4 pages each, double spaced). The first paper will be worth 50 points, and the second and third papers will be worth 75 points each. The specific topic for these papers will be assigned two weeks before they are due. In addition to the papers, you will have two exams. The first exam will be online and available per the syllabus schedule. There will be an in class final exam as well.
Participation in Lecture 15%
Participation in Seminar 15%
Pop News Article Presentation 5%
First Version of Research Paper 10%
First Exam 15%
Research Paper Presentation 10%
Second Version of Research Paper 20%
Second Exam 10%
Total = 100%

Barrett students interested in adding an honors contract to the class should contact the instructor in the first week of classes.

Grading Scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A/-</td>
<td>90.0-92.4/</td>
<td>Excellent</td>
</tr>
<tr>
<td>A/</td>
<td>92.5-97.9/</td>
<td></td>
</tr>
<tr>
<td>A+</td>
<td>98-100</td>
<td></td>
</tr>
<tr>
<td>B-</td>
<td>80.0-82.4/</td>
<td>Good</td>
</tr>
<tr>
<td>/B</td>
<td>82.5-87.4/</td>
<td></td>
</tr>
<tr>
<td>B+</td>
<td>87.5-89.9</td>
<td></td>
</tr>
<tr>
<td>C/</td>
<td>70.0-77.4/</td>
<td>Average</td>
</tr>
<tr>
<td>C+</td>
<td>77.5-79.9</td>
<td></td>
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<tr>
<td>D</td>
<td>60.0-69.9</td>
<td>Passing</td>
</tr>
<tr>
<td>E</td>
<td>&lt;60</td>
<td>Failure</td>
</tr>
<tr>
<td>XE</td>
<td></td>
<td>Failure due to Academic Dishonesty</td>
</tr>
</tbody>
</table>

[Note: in order to receive University Distribution requirement credit you must earn at least a “C.”]

Course Schedule:

Week 1: Introduction to Science & Technology Policy
- Defining and identifying policy
- Defining science and technology
- Today’s Grand Challenges: What are they??
- Western science
- Technology and ‘progress’

Readings:

Week 2: Introduction to Science & Technology Policy
- Scientific and Technological Foundations of the Economy and Society
- Sociotechnical systems
- Theories of technology
- Federal funding process
- Politics of funding

Readings:
Public Investments in Science and Technology


Week 3: Introduction to Science & Technology Policy
- Expertise, Public Policymaking, and Democracy
- Role of scientists, the public, policymakers
- Democracy and decision-making about S&T National, regional and global systems
- Managing Socio-Technological Systems

Readings and films:
- FMG Film: *Science under Attack: Has the Public lost its Faith in Scientists?* (2011, 51 min., #43946)
- FMG Film: *Nanoparticles & Mega Fears* (2009, 51 min., #41696)

Week 4: Food
- The United States as an Agricultural Nation
- Industrialization of Agriculture
- Government subsidies
- Land grants

Readings and Films:

Week 5: Food
- Global Agricultural Research
- Green Revolution
- Global agribusiness and local impacts
- Emerging food technologies
- Genetically modified foods: US vs. EU

Readings:
- FMG Film: *Biotechnology on the Farm and in the Factory* (2009, 28 min., #39778)

Week 6: Military
- S & T, arms-racing in Europe and WWI & II
- International politics, domestic politics, and military technology policy
- Inter-war years and U.S. policies Politics and policies – origins of nuclear weapons
- Nuclear proliferation

Readings:
FMG Film: Prelinger Archives: A Tale of Two Cities (1946, 12 minutes,# 41746) and Survival Under Atomic Attack (1951, 9 min., #41763)

Week 7: Military
- Transforming Science in the U.S.
- Post WWII period
- Role of universities
- Future of War
- ‘Conventional warfare’
- Revolution in military affairs


Week 8 Health
- Public Health and the Creation of FDA/NIH
- Global public health

Reading:
Articles on the TRIPS Agreement and HIV in developing countries (on BB site)

Week 9: Health
- New Science, New Diseases, New Industries
Readings & Films:
FMG Film: *History of Antibiotics* (2006, 30 min., #36095)

The Future of “Health”
FMG Film: *Kill or Cure Series* (2005, 25 min. each, #43895) – Choose one segment to review
Venter, Craig, “The Creation of ‘Synthetic Life’,” (available at http://www.youtube.com/watch?v=QHlocNOHd7A.)

Week 10: Economy
- Silicon Valley and the Knowledge Economy
Readings and Film:
Chapter from Manuel Castells, *The Rise of the Network Society*
Education / Workforce / International Competitiveness
FMG Film: *Slaves of the Cyberworld* (2007, 54 min., #41402)
Lowell, Lindsay and Hal Salzman, "Will Science and Engineering Now Be a Good Career?" Education Week Commentary, Nov. 11, 2009.

Week 11: Economy
- Internet Governance and Policy
- Global initiatives
- Global versus national tensions Transfer of technology
- Use versus production of technology
- Informal economies and public policy
Readings:
S&T Globalization and Developing Countries

Week 12: Economy
- Unequal access to knowledge
Readings:
Week 13 Sustainability
  - Ecology and Environmentalism

Readings and Films:
FMG Film: *Atmospheric Hole: History of the Ozone Layer* (2006, 30 min., #36092)
FMG Film: *Human Planet* (2010, 50 min., #43928)

Week 14: Sustainability
  - Sustainability as a Large Scale Socio-Technical Problem
  - Planetary Management

Readings:

Week 15 Student presentations, review for final exam

This syllabus is subject to change. It is your responsibility to read e-mail updates from the instructor and TAs as well as check the blackboard site for alterations made as events occur.

Incompletes: A mark of "I" (incomplete) can be given by the instructor when you are otherwise doing acceptable work but are unable to complete the course because of illness or other conditions beyond your control. You are required to arrange with the instructor for the completion of the course requirements. The arrangement must be recorded using the form at [http://students.asu.edu/forms/incomplete-grade-request](http://students.asu.edu/forms/incomplete-grade-request). Students should be proactive and discuss this with their instructor and TA before the end of the semester. Students who do not complete this form before the end of the semester cannot be given an incomplete and will be awarded a grade based on the work they have completed.

Late Assignments: Late assignments will have 1/3rd of a letter grade deducted each day they are late. Advanced written or e-mailed notice that you will miss a class or have to turn in an assignment late could help your cause.

Grade Appeals: ASU has formal and informal channels to appeal a grade. If you wish to appeal any grading decisions, please see: [http://catalog.asu.edu/appeal](http://catalog.asu.edu/appeal)

Student Standards: Students are required to read and act in accordance with university and Arizona Board of Regents policies, including: The ABOR Code of Conduct: Arizona Board of Regents Policies 5-301 through 5-308: [http://www.azregents.edu/policymanual/default.aspx](http://www.azregents.edu/policymanual/default.aspx)
**Professionalism in the Classroom:** While learning happens throughout ASU, the classroom is a particularly important focal point. Students are asked to contribute to a collegial atmosphere where ideas can be exchanged, discussed, and debated freely by avoiding disruptions through their own behavior and the distractions of their technology. Disruptive, threatening or violent behavior will be dealt with according to the policies in the Student Services Manual, SSM 104–02. Students wishing to record lectures electronically must first get permission from the instructor.

It is impossible to learn from your fellow students when you or they are not there. As such attendance is required in this course. Should you have to miss a class, contact your instructor as far in advance as possible. Depending on the nature of the absence the instructor may elect to deduct points from your overall grade. Absences can be excused for religious observances or practices that are in accord with ACD 304–04 or university sanctioned events/activities that are in accord with ACD 304–02.

**Academic Integrity:** Academic honesty is expected of all students in all examinations, papers, laboratory work, academic transactions and records. The possible sanctions include, but are not limited to, appropriate grade penalties, course failure (indicated on the transcript as a grade of E), course failure due to academic dishonesty (indicated on the transcript as a grade of XF), loss of registration privileges, disqualification and dismissal. For more information, see [http://provost.asu.edu/academicintegrity](http://provost.asu.edu/academicintegrity).

If you fail to meet the standards of academic integrity in any of the criteria listed on the university policy website, sanctions will be imposed by the instructor, school, and/or dean. Academic dishonesty includes borrowing ideas without proper citation, copying others’ work (including information posted on the internet), and failing to turn in your own work for group projects. Please be aware that if you follow an argument closely, even if it is not directly quoted, you must provide a citation to the publication, including the author, date, and page number. If you directly quote a source, you must use quotation marks and provide the same sort of citation for each quoted sentence or phrase. You may discuss assignments with other students, however, all writing that you turn in must be done independently. If you have any doubt about whether the form of cooperation you contemplate is acceptable, ask the TA or the instructor in advance of turning in an assignment. Please be aware that the work of all students submitted electronically can be scanned using SafeAssignment, which compares them against everything posted on the internet, online article/paper databases, newspapers and magazines, and papers submitted by other students. Turning in an assignment (all or in part) that you completed for a previous class is considered self-plagiarism and falls under these guidelines. Any infractions of self-plagiarism are subject to the same penalties as copying someone else’s work without proper citations. Students who have taken this class previously and would like to use the work from previous assignments should contact the instructor for permission to do so.

**Prohibition of Commercial Note Taking Services:** In accordance with ACD 304–06 Commercial Note Taking Services, written permission must be secured from the official instructor of the class in order to sell the instructor’s oral communication in the form of notes. Notes must have the note taker’s name as well as the instructor’s name, the course number, and the date.

**Student Support and Disability Accommodations:** In compliance with the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act of 1990, professional disability specialists and support staff at the Disability Resource Center (DRC) facilitate a comprehensive range of academic support services and accommodations for qualified students with disabilities. Qualified students with disabilities may be eligible to receive academic support services and accommodations. Eligibility is based on qualifying disability documentation and assessment of individual need. Students who believe they have a current and essential need for disability accommodations are responsible for requesting accommodations and providing qualifying documentation to the DRC. Every effort is made to provide reasonable accommodations for qualified
students with disabilities. Qualified students who wish to request an accommodation for a disability should contact their campus DRC at: http://www.asu.edu/studentaffairs/ed/drc/ If you are a student in need of special arrangements we will do all we can to help, based on the recommendations of these services. For the sake of equity for all students, we cannot make any accommodations without formal guidance from these services.

**Sexual Violence and Harassment:** 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](http://sexualviolenceprevention.asu.edu/faqs/students).

**Drop and Add Dates/Withdrawals:** Please refer to the academic calendar on the deadlines to drop/withdraw from this course. Consult with your advisor and notify your instructor if you are going to drop/withdraw this course. If you are considering a withdrawal, review the following policies: Withdrawal from Classes, Medical/Compassionate Withdrawal.

**Email Communications**
All email communication for this class will be done through your ASU email account and the blackboard site. You should be in the habit of checking your ASU email regularly as you will not only receive important information about your class(es), but other important university updates and information. You are solely responsible for reading and responding if necessary to any information communicated via email. For help with your email go to: [http://help.asu.edu/sims/selfhelp/SelfHelpHome.seam?dept_pk=822](http://help.asu.edu/sims/selfhelp/SelfHelpHome.seam?dept_pk=822) and file a help desk ticket by clicking on “My Help Center.”

**Campus Resources:** As an ASU student you have access to many resources on campus. This includes tutoring, academic success coaching, counseling services, financial aid, disability resources, career and internship help and many opportunities to get involved in student clubs and organizations.
- Tutoring: [https://tutoring.asu.edu/tutoring](https://tutoring.asu.edu/tutoring)
- Counseling Services: [http://students.asu.edu/counseling](http://students.asu.edu/counseling)
- Financial Aid: [http://students.asu.edu/financialaid](http://students.asu.edu/financialaid)
- Major/Career Exploration: [https://cls.asu.edu/majorexploration](https://cls.asu.edu/majorexploration)
- Career Services: [http://students.asu.edu/career](http://students.asu.edu/career)