HSD 501: Science and Technology Policy (75634)
POS 571: Science and Technology Policy (89387)
Fall 2015, Wed 3:00-5:45
EDB (Payne) L1-26

Robert Cook-Deegan (BCD; bob.cd@duke.edu);

Office hours: Interdisciplinary B, Room 360C (go into door 366, then turn left down hallway), Wednesdays 1:30-2:30 p.m. This is the building between Memorial Union and Student Services.

Description: HSD 501: Science and Technology Policy is the first semester of a two-course sequence (with HSD 502: Advanced Science and Technology Policy) that is a core requirement for ASU's Professional Science Master's (PSM) degree in Science and Technology Policy. The course incorporates the PSM's distinctive approach of treating issues of policy analysis and communication on a par with historical and social scientific understanding of the scientific and technological enterprise.

While other students are welcome with the instructor's permission, the course is tailored to the PSM. Some administrative business for those students may occasionally be transacted in class. Beyond the instructor's role, the course will draw on the expertise of faculty at the Consortium for Science, Policy and Outcomes. The course will thus be a rigorous, integrated and stimulating combination of reading, analysis, discussion, writing, and projects meant to provide students with a professional introduction to the making and communicating of science and technology policy.

Over the two semesters, the course will provide an advanced introduction to a set of analytical tools for understanding science and technology policy:

1. Knowledge Systems Assessment, which focuses on how judgments about what constitutes reliable knowledge circulate through knowledge production, dissemination, and use;
2. Usable Knowledge, which focuses on how to perform research in ways that better support decision making;
3. Real-time Technology Assessment, which focuses on methods of social science to support an empirical understanding of and governance of emerging technologies; and
4. Public Value Mapping, which focusing on assessing science and technology policies with respect to publicly articulated values and categories of public value failures that policies often suffer.

Learning outcomes: Upon completion of this class and its second-semester follow-on (HSD 502), students will:
1. gain fundamental understanding of the institutions and processes of science and technology policy in the United States;
2. be able to read, interpret, and communicate academic literature for professional purposes;
3. become skilled in written and oral communication in professional formats;
4. become familiar with a unique toolkit for analyzing science and technology policy;
and
5. develop a substantive specialty in an area of science and technology policy.

Readings will come from several sources, including scholarly texts, cutting edge and classic journal articles, government and other reports, blogs and web sites, journalism, creative writing, and even film. The majority of the readings will be available through the web (especially through an ASU computer) and/or on the course Blackboard site. One general public policy book will be used: J.W. Kingdon (any edition), *Agendas, Alternatives and Public Policies*. The book has nine basic chapters, and you should read them as the semester progresses to inform your legislative history research. One class midway in the course is dedicated to review of this material.

Students will be required to perform a number of assignments, structured around the analytical tools and communication skills required in the contemporary political environment, but also around the thematic readings and a set of policy-relevant writing skills, including:

1. **Legislative History.** Based on documentary and other research, this assignment asks students to write an analytical history of a particular public law related to science, technology, innovation or the environment. The paper should explore how an issue became a problem on the public agenda, how political actors both in and out of government responded to this problem and formulated alternative responses, and how they ultimately created a public law about it. The paper should be about 15 pages (4000-6000 words) in length, and fall semester assignments will be oriented to assist you in completing the various stages (topic selection, reference list, outline, draft, presentation, final version) of the project.

2. **One- or two-page policy brief.** This format is a standard mode of communication in political and policy environments. Ideally, it communicates from the analyst to the executive/decision maker everything he or she needs to know about a particular issue in the amount of text that fits legibly onto one or two pages that can be read on the short Capitol Subway ride from the congressional office buildings to a vote in the Capitol. It requires an excellent, analytic command of a subject area and often but not always concludes with options or recommendations. You will write one brief in each semester of the course, focused on the topic of your legislative history (Fall) and implementation study (Spring).

3. **Implementation Study.** In the Spring semester, students will conduct an implementation study of the same public law they chose in the legislative history assignment. The paper should explore how the public law came into force, including any regulations or other executive actions relevant to the law, the actions of bureaucrats in public agencies as well as at the street-level, and any information about the impact and outcomes of the law. The paper should be about 15 pages (4000-6000 words) in length, and spring semester assignments will be oriented to assist you in completing the various stages (reference list, outline, draft, presentation, final version) of the project.
4. **Point-of-view (POV) commentary (aka “op-ed”).** Commentary articles following this format often appear in newspapers, opposite the editorial page, and increasingly in the online version of magazines and journals, as well as on websites. Relying on vivid, brief examples and clear concise language, POVs convey an argument or a perspective on a significant question of public policy in a manner that is novel, persuasive or both. In the Spring semester, students will write a POV on the topic of their legislative history/implementation study with the goal of publishing it on the CSPO website’s “As we now think” blog.

While I am experienced in the classroom, this syllabus is nonetheless an evolving entity, based on the course previously offered by Prof. Guston, but tweaked to draw on my strengths and current issues. We will all be learning as we go, and I hope that you will feel free to offer constructive feedback as the course moves along. (It is thus also important that you fill out the course evaluation forms at the end of each semester, and this is noted on the syllabus; we will also devote part of our final class session to a collective evaluation.) Because this is a graduate-level professional course, I expect that a significant amount of learning will occur among the students, as well as between the instructor and the students. For such learning to occur, it is vital that everyone attend all classes and come prepared. I realize that being a student is only one part of your life, and if something personal, professional or otherwise makes it impossible to attend or to prepare, please let me know as soon as possible. Unexcused absences and late assignments will be appropriately penalized in grading.

**Class 1: 26 Aug  Introduction**
Instructor, Students, Course, Assignments
Discussion about goals for course
STS and Science Policy (mini-lecture and discussion)

We will be joined at this class by Prof. Guston, who will explain the history of the course, its logic, and the framework for the legislative history project. We will also be joined by Prof. Andrew Maynard will also join us, to meet you and also hear Prof. Guston’s introduction. He will be leading HSD 502 next semester, the culmination of this two-semester sequence.

Readings:

Please email me a recent article from a newspaper or magazine or a blog entry or similar, popular piece related to S&T policy that exemplifies what you’re interested in or something that you would like to know more about.

**Class 2: 2 Sept  Science, Technology, Engineering, Innovation, Knowledge, Research, Technoscience, Huh?**

Acronym definitions assignment due
Readings:


**Class 3: 9 Sep History and Overview of S&T Policy**

Readings:


Prof. Guston will once again join us to walk us through this module of the course.

**Class 4: 16 Sep Tool: Knowledge Systems Assessment**

Readings:


“3 Angry Scientists.” Film by the Science Museum, Minnesota. [http://vimeo.com/channels/exhibits](http://vimeo.com/channels/exhibits)
Presentations: Everyone will read the Miller report and four students will prepare and deliver a 5-7 minute presentation on one of the other articles individually.

Class 5: 23 Sep  Technological Momentum and the Technological Imperative

I will be joining class from Washington, DC, rather than in Tempe. Andrew Maynard has kindly agreed to join you in Tempe in my absence.

Readings:


Class 6: 30 Sept  (Re)Introduction to the Policy Process

Legislative History: Topic Due; Reference list due

Readings:


Class 7: 7 Oct Tool  Usable Science

Discussion and activity

Legislative History: one minute “elevator briefing”

Readings:


Class 8: 14 Oct  Case: Boundary Organizations & Technology Assessment
Presentations and discussion

Legislative History: Reference List Due

Readings:


Presentations: Everyone will read the Guston papers and the OTA staff report. One of the student groups will prepare and deliver a 7-10 minute presentation on how these concepts map to their chosen legislative history.

*Class 9: 21 Oct*   
**Tool: Real-time Technology Assessment**

Presentations and discussion

Readings:


Presentations: Everyone will read the Guston and Sarewitz article and the first two chapters of the Wilson Center report. One student group will prepare and deliver a 7-10 minute presentation on how these concepts map to their chosen legislative history.

*Class 10: 28 Oct*   
**Review, Catch-up, and Discussion of Legislative Histories**

Legislative History: Outline Due.

In-class discussion of policy memo format.

*Class 11: 4 Nov*   
**Cases: Emerging Technologies**

Policy memo due
Readings:

Recombinant DNA

Cloning

Synthetic Biology

CRISPR/Cas-9 DNA editing technology
Intro:
Good intro (4 minute) video from the McGovern Institute at MIT: https://www.youtube.com/watch?v=2pp17E4E-08.

For more technical depth:
A longer (17-minute) video intro starring co-inventor Jennifer Doudna:
https://www.youtube.com/watch?v=SuAxDVBt7kQ.

Hsu, P.D., E. S. Lander and F. Zhang, “Development and Applications of CRISPR-Cas9 for
Genome Engineering,” Cell 157 (No.6, 5 June): 1262–1278, 2014. Available at:
http://dx.doi.org/10.1016/j.cell.2014.05.010.

Concerns and policy proposals:

Lanphier E., F. Urnov, S. E. Haecker, et al., “Don’t Edit the Human Germ Line,” Commentary,

Available at: http://www.sciencemag.org/content/348/6230/36.

Cyranoski, D., and S. Reardon, “Embryo Editing Sparks Epic Debate,” Nature 520 (30 April):

Available at: https://www.sciencemag.org/content/347/6228/1301.

Chris Gyngell and Julian Savulescu, “The moral imperative to research editing embryos: The
need to modify Nature and Science,” University of Oxford Practical Ethics blog post:
http://blog.practicalethics.ox.ac.uk/2015/04/the-moral-imperative-to-research-editing-embryos-the-need-to-modify-nature-and-science/.

We will break into four groups, each addressing one of the “emerging biological
technologies” above. Each group will do the readings for its respective emerging
technology and will explain the history and policy debate for their technology to the
entire group. This week will be work in the small groups to discuss the case and plan
how to present it to the rest of the class, to prepare the discussion for next week’s Class 12.

11 November, Veteran’s Day (no class)

Class 12: 18 Nov  Tool: Anticipatory Governance

Readings:


Class discussion: We will start with a discussion of the article, and then review the
emerging technologies from the previous week, looking for similarities and differences in
the cases, keying to the role of expert advice in policy formulation. Each group will present their policy history of an emerging biological technology.

**Class 13: 25 Nov  Review, Catch-up, and Discussion of Legislative Histories**

Legislative History: Draft Due. This is our penultimate class, and falls the day before Thanksgiving. We’ll decide the format for this class depending on attendance and where we are with the class by this time. We will likely present legislative histories in this class and the final class, but let’s make sure that will work.

**Class 14 (final class): 2 Dec  Presentations: Legislative Histories**

Students will make formal presentations of their legislative histories to the class. Presentations should be 10 minutes long, leaving 5 minutes for questions.

**9 December:** final draft of legislative history due (to Blackboard dropbox).
Appendix 1: Assignments & Grading

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<thead>
<tr>
<th>Course</th>
<th>Assignment</th>
<th>Hand Out/Prep</th>
<th>Due Prior to Class</th>
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<tbody>
<tr>
<td>HSD 501</td>
<td>Acronym Assignment</td>
<td>26 August</td>
<td>2 September</td>
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<tr>
<td></td>
<td>Legislative History Topic</td>
<td>26 August</td>
<td>30 September</td>
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<td></td>
<td>Legislative History Reference list</td>
<td>30 Sept</td>
<td>14 October</td>
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<td></td>
<td>Legislative History Outline</td>
<td>14 October</td>
<td>28 October</td>
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<td></td>
<td>One-page policy brief</td>
<td>28 Oct</td>
<td>4 November</td>
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<td></td>
<td>Legislative History Draft</td>
<td>ongoing</td>
<td>18 November</td>
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<tr>
<td></td>
<td>Legislative history (presentation)</td>
<td>ongoing</td>
<td>25 November</td>
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<tr>
<td></td>
<td>Legislative history (presentation cont)</td>
<td>ongoing</td>
<td>2 December</td>
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<tr>
<td></td>
<td>Legislative history (final paper)</td>
<td>ongoing</td>
<td>9 Dec (after classes end)</td>
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<td>HSD 502</td>
<td>Point-of-view</td>
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<td>One-page policy brief</td>
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<td>Implementation Study Reference List</td>
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<td>Implementation Outline</td>
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<td>Implementation Study Draft</td>
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<td>Implementation Study (presentation)</td>
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<td>Implementation Study (paper)</td>
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Grading

<table>
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<tr>
<th>Assignment</th>
<th>Grade</th>
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<tbody>
<tr>
<td>Acronym Assignment</td>
<td>5%</td>
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<tr>
<td>Topic/Elevator briefing</td>
<td>5%</td>
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<tr>
<td>Reference List</td>
<td>5%</td>
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<tr>
<td>Outline</td>
<td>5%</td>
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<tr>
<td>Policy Brief</td>
<td>10%</td>
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<tr>
<td>Legislative history presentation</td>
<td>5%</td>
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<tr>
<td>Legislative history paper</td>
<td>40%</td>
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<tr>
<td>Class participation/presentations</td>
<td>25%</td>
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**Instructions for the policy memo:**
You are staff to a Member of Congress of your choosing. You prepare a background policy memo addressing your Member about the topic on which you are doing your legislative history. It can be no longer than 3 pages-single spaced. Orient it so that the key points are first, with background and reasons for taking your recommended positions following, in bullet/talking point format. Think that you are preparing your Member for either a vote or a speech to announce his or her position on the issue. Think through the policy, the politics, how stakeholders and especially your Member’s constituents will react, and what your Member should expect when he or she announces your recommended position, gives
their speech, or casts their vote. Specify who you are writing it for, what your imagined role is in his or her office, and why you are writing it now and for what purpose.

**General expectations and grading**

**Grading Standards for Class Participation**

A or A- is for students whose attendance is excellent, who contribute regularly to discussion, and whose contributions consistently improve the quality and vitality of discussion. Students who receive grades in this range offer thoughtful analyses and summaries of texts, raise new questions, prompt new directions of inquiry, listen carefully to others and synthesize or comment on their views. A is generally reserved for those with no unexcused absences and who complete all blogs. You can have up to two excused absences and still get an A-.

**B+:** for those whose attendance is excellent and who contribute regularly and productively to discussion.

**B:** for those whose attendance is excellent and who contribute occasionally to discussion.

**B-:** for those whose attendance record is spotty and/or make few contributions to class discussion.

**C+ or C:** attendance record is highly imperfect, rare participation in class discussions. Disengaged, distracted or disruptive during class.

Poor attendance, missing blogs or assignments, or significant disruption may warrant a participation grade of C-, D, or F.
Grading Standards for Writing

A+: Publishable paper


B: Good, solid, analysis and clear writing. Few grammatical and syntactical errors. Few errors of logic or missing, inconsistent or obscure arguments. Facts accurate and well referenced.

C: Pedestrian but competent.

D: Careless, poor analysis, failure to attribute credit, failure to cite or use pertinent facts.

F: Assignment not done; failure, plagiarism, or other effort that does not meet scholarly standards.
Appendix 2: Academic Integrity

This course has by design a central focus on written, oral and even visual communication, and these forms of communication need to adhere to norms of academic discourse. These norms vary depending on the style of communication, e.g., in the legislative history you will follow more strict norms of attribution than you will for the op-ed. In no case, however, will you ever represent someone else’s words or ideas as your own.

General guidelines for academic work 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. Some forms relax the requirement for page number (e.g., an op-ed), but they do not relax the requirement for attribution.
- If the text you are writing makes a specific and not commonly known point that is derived from a source, you must cite that source. Paraphrasing, no matter what the source (even government documents), requires attribution (footnote or reference).
- If the text you are referencing makes a point, even a specific one, that is commonly known (e.g., if you could find that same point in several different sources), you do not need to attribute it to a source. But you still must cite the source if you are quoting it, rather than using your own words to make the point.

There are two important reasons for rules of attribution. One is 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 making appropriate attribution. Attribution is NOT about the legalities of copyright – it is about the integrity of scholarship.

ASU’s academic integrity policies are available at: http://provost.asu.edu/academicintegrity. Please note that there can be severe consequences to failure to adhere to standards of academic integrity.

With regard to style and grammar, your writing should, above all, be clear and correct. Aim for clarity first and elegance later, and eschew sesquipedalianism (>::). If you have questions about grammar and style, please consult the Writing Center, which has a number of resources that are very helpful (http://studentsuccess.asu.edu/tempe-writing/resources/links). You should be absolutely sure to proofread your final versions of assignments at least twice—do not rely solely on your word processor’s spell check, as there is more to good grammar and good style (and, indeed, good spelling) than spell check. But please use the spell check, with the grammar check turned on, because it will help you identify sentences that may need some work.
Appendix 3: Disability Policy

Disability Accommodations: Qualified students with disabilities who will require disability accommodations in this class are encouraged to make their requests to me at the beginning of the semester either during office hours or by appointment.

Note: Prior to receiving disability accommodations, verification of eligibility from the Disability Resource Center (DRC) is required. Disability information is confidential.

Establishing Eligibility for Disability Accommodations: 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. Their office is located on the first floor of the Matthews Center Building. DRC staff can also be reached at: 480-965-1234 (V), 480-965-9000 (TTY). For additional information, visit: www.asu.edu/studentaffairs/ed/drc. Their hours are 8:00 AM to 5:00 PM, Monday through Friday.