TMP 352-2

Science and Technology Public Policy

Mondays and Wednesdays 3:30-4:45 PM
Room: MEC 341
18 January 2006

INSTRUCTOR: G. E. Louis
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COURSE DESCRIPTION:
This course examines the "macro" aspects of science and technology management, namely the development of public policies aimed at promoting and regulating science and technology. Topics include the justifications for the federal government's efforts to promote or regulate science and technology; the historical evolution of the federal government's involvement in science policy; the players, organizations, and agencies who make science policy in the federal government; the reasons the government funds the research it does; how science and technology is regulated by the government; and, the roles state and local governments play in the development of local science and technology policies. The course explores how science and technology policies are developed in response to challenges posed by the world economy, and how other countries manage their science and technology policies.

GOAL AND OBJECTIVES:
The goal of this course is to develop students' ability to evaluate critically public policies for science and technology (S&T). This will be accomplished through three objectives:

1. To build students' knowledge and comprehension of the lifecycle of S&T
2. To apply this comprehension to analysis of the historical context and motivations for S&T Public Policy (STP)
3. To synthesize this knowledge, comprehension, application, and analysis into researched case studies involving the critical evaluation of STP

REQUIRED TEXTBOOK
Easton, Thomas, A., Taking Sides: Clashing Views on Controversial Issues in Science, Technology, and Society, 7th Edition, McGraw-Hill, /Dushkin, Guilford, CT. 2006.

GRADING POLICY:

Project Report	20%
Project Presentation	10%
Technical Paper	20%
Discussion Papers	20%
Final Exam	15%
Attendance & Participation	15%

SELECTED READINGS:

Will be assigned outside of the textbook

DISCUSSION PAPERS

Each of the topics in red on the schedule represents a classroom discussion based on a reading from the text. Each student should prepare a one page position paper on the reading being careful to articulate arguments pro and con the topic, ending with a summary of and reason for your position. Minimum 11 point Times New Roman font, single spaced.

Statements are to be researched from the reading and supplementary material found by the student. Please list all references at the end of your paper. These will be collected at the end of class.

PROJECT

Projects may be taken from the list of topics covered in the course lectures and discussion. Any other choice of topic must be approved by the instructor.

Projects will be completed by teams of 4 members each. The project requires a 10 page report in 12 point Times New Roman font with 1.5 line spacing. Pages should be numbered in the lower right hand corner. The 10 page limit includes the bibliography (at least 50% non-internet references). The report is due at the start of class on April 10th, 2006. Late reports will not be accepted.

PROJECT REPORT GRADING CRITERIA:

1. Define the issue/problem
2. Why is it relevant/important to STP?
3. Your goal/objectives in the project and report
4. Who are the major stakeholders and what are their positions on the issue/problem?
5. Description of the technology/principles, and their link to the issue/problem
6. What are the main public policy criteria used to evaluate the issue/problem?
7. Your analysis and evaluation of the issue/problem using these criteria
8. Your recommendation relative to positions on the issue researched in the literature
9. Clarity and persuasiveness of your narrative
10. Bibliography/thoroughness of research

PROJECT PRESENTATIONS

Each group will give a 20 minute presentation on their project. The presentation will be followed by a 5 minute question period. The schedule of presentations is included in the course calendar below. Group numbers will be assigned at random once the project groups have been chosen.

TECHNOLOGY POSITION PAPER

This 10 page paper summarizes each student's individual expertise on a technology of their choice. It will cover the following points:

1. Name and general description of the technology including any relevant patent # and disclosure statement.
2. The major applications of the technology
3. Detailed description of how the technology works including the principles underlying the technology
4. History and lifecycle of the technology
5. Description of the principal manufacturers, users, and markets for the technology
6. Risks, benefits and equity issues associated with the technology
7. Public policy relevant to the technology
8. Why you selected this technology – relevance to you
9. Future prospects for the technology
10. Conclusion
11. Bibliography (at least 50% non-internet resources)

INSTRUCTOR'S MISSION STATEMENT/OBJECTIVES:

- Facilitate the process of learning for the students
- Share with the students the instructor's vision of what constitutes science and technology public policy in practice.
- Ensure that the students are meeting the course's mission statement.
- Create constancy of purpose for each class session and promote the concept of *holism* throughout the course.
- Encourage productive class discussion, promote personal growth of every student, and provide a class environment that is conducive to creative thinking, to non-conventional arguments, and to stimulating colloquy.
- Promote, enhance, and strengthen the *production capability* (not only the *production*) of every student.

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Course Calendar

This calendar below describes the topics of each class meeting, reading assignments, and homework assignments. Readings will be taken from the text, articles from the literature, newspapers, and sites on the Web. The calendar below indicates topics for only some of the initial class meeting dates. This calendar will be updated as the course unfolds. Readings associated with a particular date *should be completed* before you come to class.

For selected course dates, there is an associated assignment that is *due in class on the associated date*.

Date	Class Topic	Readings and Assignments Due
18 Jan	Introduction to the Course	Course syllabus
23 Jan	Context; Definition of Science, Technology & Public Policy	Kent H. Hughes, "Facing the Global Competitiveness challenge: a renewed and systematic focus on innovation is the key to U.S. economic growth and prosperity." *Issues in Science and Technology* 21.4 (Summer 2005): p72(7). Bush budget would cut most R & D programs.(FROM THE HILL). *Issues in Science and Technology* 2005): p16(3).
25 Jan	Discussion: U.S. Innovation Enterprise	Read: Exec. Summary of *Preparing for the Gathering Storm*
30 Jan **	Lifecycle of an S&T issue - case study of Chloro-Fluoro Carbons	CFCs and the Ozone Hole: *Engineering & The Environment*, E. S. Rubin, McGraw-Hill, 2001. 434-468
1 Feb	Discuss State of the Union address	Watch President's State of the Union Address on 31 Jan
6 Feb	Institutional context of S&T policy - Organizations and processes at the Federal Level	Introduction to the Federal Budget Process, CRS 2004. 1-32 Also: http://www.theusgov.com/
8 Feb	Federal funding of research - basic and applied	Review AAAS Analysis of FY06 Budget
13 Feb	Discussion: Should Intelligent Design & Evolution be taught on an equal footing in school?	Read: Text, pages 45-61
15 Feb	Should Potential Risks Slow the Development of Nanotechnology	Read: Text, pages 178-195

20 Feb	Federal management of technology: High Performance Computing & Communications and Sematech	
22 Feb	Sustainability	Thomas Malone, "The World After Rio, The Role of Engineering in Sustainable Development," and Henry Hatch, "Accepting The Challenge of Sustainable Development" American Association of Engineering Societies, Washington DC, 1994. 25-39.
27 Feb	Discussion: Is it time to revive nuclear power?	Read: Text, pages 88-105. Also: M. Adams, "Sustainable Energy from Nuclear Fission Power," *The Bridge*, NAE, Winter 2002. 20-26. M.S.Y. Chiu and J.R. Dyer, Licensing, Design, and Construction of the Yucca Mountain Repository, *The Bridge*, NAE, Fall 2003. 18-25.
1 Mar	Discussion: Should stem cell research be restricted?	Robert L. Paarlberg, "The great stem cell race," *Foreign Policy* 148 (May-June 2005): p44(8).
3-11 Mar	Spring Recess	
13 Mar	Discussion: Should the U.S. convert to a hydrogen economy?	Read: Text, pages 106-122 Also: P. Domenici, "Powering the Future," *The Bridge*, NAE, Summer 2002. 18-22 H. Payne, D. Katz, "Will Hydrogen End Our Fossil-Fuel Addicition?" Taking Sides-Environmental Issues, 11 ed., T. Easton, McGraw-Hill, 2006. 156-167
15 Mar	The Global Technology Divide and U.S. Foreign Policy	TBD **Technology Paper is due**
20 Mar	Privacy and Ethics	J.F. Blanchette, D.G. Johnson, "Data Retention and the Panoptic Society: The Social Benefits of

		Forgetfulness," *The Information Society*, N(18). 2002. 33-45
22 Mar	Discussion: Should NASA continue to pursue Manned Space Exploration?	Read: Text, pages 230-250
27 Mar	S&T and the President's Budget (PB07)	Explore AAAS Analysis of PB07(when posted). Analysis of FY06 budget
29 Mar	Global Competition and International Trade: Microsoft's Browser in the EC	Assorted Readings
3 Apr	Discussion: Does the use of surveillance technology threaten privacy?	Read: Text, pages 271-284 Read: Excerpt from **The Transparent Society** by David Brin
5 Apr	Trading Zones and Convergent Technologies	M. Gorman, "Collaborating on Convergent Technologies," UVA-STS
10 Apr	Technology, policy & endangered species: Salmon in the Pacific Northwest	R. Lackey, "Salmon and the Endangered Species Act: Troublesome Questions," Renewable Resources Journal, 19(2) 6-9. **Final Project Report Due**
12 Apr	Discussion: Should genetically modified foods be banned?	Read: Text, pages 328-346
17 Apr **	Discussion: The Bottom Line: Is Sustainable Development Compatible with Human Welfare	D. Payne, C. Rayborn, R. Bailey, "Is Sustainable Development Compatible with Human Welfare?" Taking Sides-Environmental Issues, 11 ed., T. Easton, McGraw-Hill, 2006. 22-38
19 Apr	**Summary Examination**	
24 Apr	Student group presentations: 1-3	Electronic copy of slides due
26 Apr	Student group presentations: 4-6	Electronic copy of slides due
1 May	Student group presentations: 7-8	Electronic copy of slides due