

PUBP760

Innovation Policy in the 21st Century: Technology, Governance, and Globalization

Spring 2004

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office hours: Wednesday 3:00 PM - 4:00PM.

course credit: 3

1st Day: *January 28* [class will not meet on 1/22]

room: Arlington (Old Building), room TBA

meeting time: Wed 4:20 - 7:00PM

Description

This course investigates the dynamic interaction of technology and governance in a global context. The course focuses on innovative approaches to governance that generate, direct, and respond to rapid technological change, with particular attention to the design and analysis of public policy. We will ask: How do science and technology influence public policy? How does public policy influence the evolution of science and technology? How do the outcomes of these interactions affect well-being in the United States and worldwide? How can the processes involved be made more effective and their outcomes more beneficial? The course is intended to develop (1) students' understanding of theoretical frameworks relevant to these core questions; (2) appreciation for pertinent data and historical context; and (3) ability to undertake informed policy design and analysis. Topics addressed include technology policy for economic growth; efficiency, vulnerability, and counter-terrorism; ethical issues raised by breakthroughs in the life sciences; the role of energy technology innovation in the mitigation of adverse impacts from climate change; and technology and governance for sustainable development.

Introduction

Over the past century science and technology have fundamentally reshaped the human experience. The public dimension of decisions relating to scientific and technological transformations has expanded accordingly. At the start of the century, the loftiest discussions relating to science and technology pertained to the regulation of medicinals. Today, community, political, and business leaders are challenged to make decisions that have the potential to affect the long term evolution not only of human society, but of the climate and very patterns of life on the planet.

There is every reason to believe that the impact of science and technology will be at least as great in the next hundred years as it was in the last. To what extent should the public and private sector

each bear responsibility for not only generating new scientific advances, but also for converting basic science “inventions” into commercial “innovations”? How will individuals with public responsibilities at different levels of government and in different parts of the globe contend with ethical dilemmas and social disruptions inevitably ensuing from rapid technological change? In short, what public actions can be taken to realize the promise of scientific advance and technological change while mitigating its adverse impacts? These are topics that we will address in this course.

Expectations

This class is a seminar. Students will be expected

- to have read the material assigned for each seminar session in advance of the class, and
- to participate actively in discussion of readings and analysis of case studies.

Students who do not participate in class discussion and case studies will have a lower grade than active participants.

In addition to competing readings and participating in class discussions, students are expected to write 3-4 analytic essays (750-1000 words each) based on the readings. These essays will be presented in class. Students may elect to substitute one substantial research paper for the writing of the set of short essays. Those who undertake the writing of a research paper will have the opportunity to present their work to the class at the end of the term. There will also be a final exam in the course assessing understanding of readings and insights regarding core material in the course.

The grade in the course will be determined by the following:

- contributions to class discussion: 20%
- quality of written work (analytic essays or research paper): 60%
- final exam: 20%

Course Materials

Readings and cases will be available from either in a course reading packet or online via JSTOR.

Schedule

1. January 21. NO CLASS

2. January 28. *Introduction /overview.*

3. February 4. *Creating new combinations: The long history of human inventiveness* [**Common Grounds, upstairs**]

reading:

Joseph Schumpeter, *The Theory of Economic Development*. New York: Oxford University Press, 1961 [1911], pp. 11-22. [JC]

Jane Jacobs, *The Economy of Cities*. New York: Vintage Ed.; 1970, pp. 1-36. [JC]

Jared Diamond, *Guns, Germs, and Steel*. New York: Norton, 1997, pp. 215-238.

case: The origins of the alphabet. [JT]

4. February 12 (THURSDAY): Meeting with Jerry Coughter, Finley 207 (Fairfax), noon-2:00

DUE: JC paper topic proposal [one page]

5. February 18. *Innovation, technology, and governance: Parallel evolution, reciprocal impacts* [Arlington, location TBD]

reading:

Nathan Rosenberg and L.E. Birdzell, *How the West Grew Rich: The Economic Transformation of the Industrial World*. New York: Basic, 1986, pp. 1-36, 242-268. [JC]

Martin L. Weitzman, "Hybridizing Growth Theory," *American Economic Review* 86(2): 207-212 (May 1996). [GMU online journal: JSTOR] [JC]

Henry Chesbrough, "Chasing Economies of Scope: Xerox's Management of its Technology Spinoff Organizations," unpublished manuscript, June, 2000. [JT]

cases: The collapse of the former Soviet Union; Xerox PARC.

6. February 25. DUE: JT paper topic proposal [one page]

***Innovation Policy* [Arlington, location TBD]**

reading:

Audretsch et. al., "The Economics of Science and Technology Policy," *Journal of Technology Transfer*, Vol. 27, 2002. [GMU online Journal: Kluwer Journals Online] [JC]

Jaffe, Adam B. (2000), "The U.S. Patent System in Transition: Policy Innovation and the Innovation Process," *Research Policy*, 29, pp. 531-557. [GMU online journals: ScienceDirect, Elsevier Science Journals] [JC]

Lanjouw, Jean. "The Introduction of Pharmaceutical Product Patents in India: 'Heartless Exploitation of the Poor and Suffering'?" NBER Working Paper 6366. [JT]

focus topics: bio-pharmaceutical innovation; pharmaceutical patents in developing countries.

7. March 3. Meeting with James Tsai [Common Grounds, second floor]—paper outline due

March 10. No class (Spring break) [Alternate date to be scheduled in the event of class cancellation due to inclement weather].

8. March 18. (THURSDAY): Meeting with Jerry Coughter, Finley 207 (Fairfax), noon-2:00

DUE: JC paper outline [4-8 pages]

9. March 24. *Globalization: Millennial trend, historical singularity* [Arlington, location TBD]

readings:

Amartya Sen, "Globalization and Solidarity." Boston University Fredrick S. Pardee Center Distinguished Lecture, November 28, 2001. [JT]

David B. Audretsch and A. Roy Thurik, "What's New About the New Economy," Indiana University Institute for Development Strategies working paper, 2001.

<<http://www.spea.indiana.edu/ids/pdfholder/ISSN-01-1.pdf>> [JC]

Ashish Arora, Alfonso Gambardella, Salvatore Torrisi, "International Outsourcing and Emergence of Industrial Clusters: The Software Industry in Ireland and India," unpublished manuscript, 2000. [JC]

focus topics: Regional economic development; the emergence of software development clusters in India and Ireland.

10. March 31. *Paradoxes of Progress* [Arlington, location TBD]

reading:

The United States Commission on National Security in the 21st Century (Warren Rudman and Gary Hart, chairs), *New World Coming: American Security in the 21st Century*, 1999. [JC]
Bill Joy, "Why the future doesn't need us." *Wired* 8(4), April 2000.

<<http://www.wired.com/wired/archive/8.04/joy.html>> [JT and JC]

Laurie Garrett, "The Return of Infectious Disease," *Foreign Affairs*, January/February 1996.
focus topics: complexity and specialization; antibiotic resistance; nanotechnology. [JT]

11. April 7. Meeting with James Tsai [Common Grounds, second floor]

DUE: JT paper outline [4-8 pages]

12. April 15. (THURSDAY). Meeting with Jerry Coughter, Finley 207 (Fairfax), noon-2:00

DUE: JC first draft

13. April 21. Meeting with James Tsai [Common Grounds, second floor]

DUE: JT first draft

14. April 28. Open.

15. May 5. Presentations. [Arlington, SPP conference room]

DUE: JT and JC final drafts