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## **REVISED SYLLABUS, STS 176: TECHNOLOGY AND POLITICS**

Mondays and Wednesdays, 3:15 p.m.-5:05 p.m., Building 380, Room 381U  
Office hours: Wednesdays, 1:00 p.m.-3:00 p.m., Building 370, Room 212

### **OVERVIEW OF COURSE**

**Course objectives:** This course examines two subjects: (1) the impact that politics and government have on technology – on technology’s development, applications, and benefits and costs – and (2) the impact that new technologies such as the Internet are having on politics, including elections. It focuses on American politics, but with some attention to developments in other countries.

The course pays particular attention to questions of technology and democracy.

- # How democratic are the decisions that governments make regarding technology? Do citizens and elected officials or a relatively few experts make the major decisions? Are decisions made in a clear, deliberative way or in fact do societies tend to drift in certain technical directions without much thought or deliberation?
- # What would a more “democratic” way of directing technology look like, and would it actually be desirable? For example, what would be more “democratic” ways of guiding the development and use of biotechnologies or nanotechnologies?
- # In terms of the impact of technology on politics, have innovations such as television and the Internet broadly enhanced or hurt important features of democratic life such as equality, freedom, and participation?

**Course themes:** Three themes run through this course:

- # Today, all governments are revolutionary, in the sense that they fund new technologies that will produce significant but often unforeseen changes. In turn, these changes create benefits but also may create problems or conflict with established cultural values. And major political battles often break out over who will control new technologies. Thus, the management of new technologies and their consequences is a major challenge for governments and societies.

- # In technology politics, there is a continuing tension between political leaders and citizens, on the one hand, and technical experts, on the other. Political leaders set broad policy – through funding priorities, regulations, and other policies – but they must delegate technical details to the experts in government agencies, research organizations, and corporations. Technical experts, for their part, seek autonomy – the ability to run technical activities without “political interference.” Sometimes they build political coalitions that give them great autonomy, with results that are either impressive successes (such as the Apollo Program) or, if the technical viewpoint is narrow, serious failures (such as the design of nuclear power plants). How political leaders and experts interact and should interact are important questions.
  
- # New technologies have broad impacts on both society as a whole – influencing, for example, who has wealth, political power, access to media, etc. – and on specific aspects of politics such as how people communicate and participate. These new technologies can have unforeseen consequences. For example, the Internet allows new virtual communities that provide more information and connection to like-minded individuals, but may lead to less contact and discussion with people of different viewpoints.

**Course outline:** The course is divided into four parts:

- # *Introduction to technology and politics.* What are “technology”, “politics”, and “democracy”; and what types of public debates concerning technology arise in democratic societies?
  
- # *How politics shape technology.* This section of the course asks why we get the technologies that we do, and who decides. It covers several topics: basic features of American politics; traditional American views regarding technology and the appropriate role of government concerning technology; how technical experts seek political autonomy and how that autonomy can lead to both good and bad results for society; the rise, since the late 1960s, of political challenges to technical elites; and the ways in which economic elites seek to control new technologies. Case studies will include achievements in agricultural research, problems with nuclear power and the space shuttle, debates over who should control biotechnology and nanotechnology, and political struggles over who should control technologies such as radio and the Internet.
  
- # *How technology affects politics.* Technological change can affect politics in several ways: by changing society and the economy, including the distribution of wealth and economic and political power; by changing the nature and relative power of different branches of government; and by changing how citizens communicate, organize, and participate in politics and especially elections. In short, how do new technologies change who has power, how leaders decide, and how we talk and interact with each other? This section of the course will look at these topics and examine several case studies: how information technology is

contributing to “offshoring” and associated changes in the economic and political power of American workers; how new technologies changed and challenged Congress, including the role of air conditioning in the rise of the Republican Party in the American South; and how the Internet may or may not be changing American politics.

- # *Conclusion: democracy and technology.* The final class will review the questions of how much control over technology democratic institutions actually have and how much control is possible or desirable.

**Prerequisite:** This course is aimed at upper division undergraduates and graduate students. The prerequisite is Political Science 1 (Introduction to Political Science), Political Science 10 (Introduction to American Government), or permission of the instructor.

**Grading:** Grades will be determined as follows:

- # *Three short papers:* 45 percent of the final grade (15 percent each). These three papers will be a maximum of three double-spaced pages each. In each case, students will answer one question among a list of questions offered by the instructor. The three papers will be due on October 18, November 8, and November 29.
- # *Final paper:* 40 percent of the final grade. Instead of a final examination, each student will write a paper between 10 and 15 double-spaced pages. Students will pick their own topics, in consultation with the instructor.
- # *Class participation:* 15 percent of the final grade.

**Required readings:**

- # Course reader (abbreviated below as “R”), available from the campus bookstore.
- # John Street, *Politics and Technology* (New York: The Guilford Press, 1992), available at the bookstore.
- # Debora Spar, *Ruling the Waves: Cycles of Discovery, Chaos, and Wealth from the Compass to the Internet* (New York: Harcourt, 2001), available at the bookstore.
- # Materials on the Web (abbreviated below as “W”).

## COURSE SCHEDULE AND READINGS

### A. INTRODUCTION TO TECHNOLOGY AND POLITICS

#### 1. Introduction to course (September 27)

*Introduction to the course's topics, themes, and sessions. There are no readings for this introductory session.*

#### 2. Technology, society, and politics: what shapes what? (September 29)

*Discussion of basic terms and concepts. What do the terms "technology" and "politics" mean? And does technology determine social and political outcomes, is it the other way around, or is there some combination of effects? The readings are:*

- # Norman Vig, "Technology, Philosophy, and the State," chapter 1 in Kraft and Vig, *Technology and Politics*. (R)
- # Langdon Winner, "Do Artifacts Have Politics?" chapter 2 in Kraft and Vig, *Technology and Politics*. (R)
- # Robert McGinn, "Social Control of Science and Technology," chapter 14 in *Science, Technology, and Society*. (R)

#### 3. The role of the state (October 4)

*The "state" (governmental institutions) shapes technology in three main ways: as underwriter/supporter, as user/customer, and as regulator. The state also supports science, which leads to the important question of whether the state can or should control science and its impact on technological development. John Street looks at these topics in both the United States and the United Kingdom.*

- # John Street, *Politics and Technology*, chapters 1-4.

#### 4. Debates over the control of technology (October 6)

*What are the political effects of technology, how do societies choose their technologies, and what is the relationship between technology and democracy?*

- # John Street, *Politics and Technology*, chapters 5-9.

### B. HOW POLITICS SHAPE TECHNOLOGY

#### 5. American institutions and policy-making (October 11)

*By constitutional design, power in the U.S. Government is divided among different branches ("checks and balances"), requiring policy advocates to build coalitions in order to win approval for new policies. Policy-making for technology follows this standard pattern – with the added twist that technical experts sometimes play key roles.*

- # James Q. Wilson, *American Government: Brief Version*, Sixth Edition, chapters 1-2 and 12-13. (R)

## 6. American attitudes towards technology (October 12)

*This class covers both general American attitudes towards technology and technological change and the specific arguments different groups have made about what role the federal government should play in the development and use of technology. Leo Marx discusses both the dominant American attitude towards technology – an optimistic attitude – and the history of dissent by those who think new technologies have been destructive. David Hart examines five different political positions regarding federal technology policy – positions that are based largely on different views of what government should and should not do. He argues that the technology policy adopted by the U.S. Government after World War II is a “hybrid” of these five enduring viewpoints. And that “hybrid” is the result of political battles, not the automatic product of efficient government or some overall American ideology.*

- # Leo Marx, “Does Improved Technology Mean Progress?” chapter 1 in Teich, *Technology and the Future*, Ninth Edition. (R)
- # David Hart, “The Malleability of American Liberalism and the Making of Public Policy” and “The Past in the Present: The ‘Hybrid’ in the Cold War and Beyond,” chapters 1 and 8 in *Forged Consensus: Science, Technology, and Economic Policy in the United States, 1921-1953*. (R)

## 7. The Bush and Kerry views of technology and technology policy (October 18)

*The technology proposals of the two presidential candidates reflect their different political philosophies and the different constituencies they want to attract. In 2004, debates over stem-cell research and federal support for new industrial technologies are particularly contentious. Even so, there are similarities as well as differences in the two positions.*

- # Bush Campaign, “President Bush Promotes Plan to Stay on Cutting Edge of Technology,” <http://www.georgewbush.com/News/Read.aspx?ID=2833>. (W)
- # Bush Campaign, “The Raw Deal: Kerry Ignores President Bush’s Record Science Investments,” <http://www.georgewbush.com/News/Read.aspx?ID=2811>. (W)
- # Bush Campaign, “Policy Memorandum: Bush Administration First to Fund Embryonic Stem Cell Research,” <http://www.georgewbush.com/News/Read.aspx?ID=3095>. (W)
- # Gerald Hane, “Neo-Conservative Science and Technology Policy” (handout)
- # Kerry Campaign, “New Frontiers in a New Century,” <http://www.johnkerry.com/issues/technology/>. (W)
- # Kerry Campaign, “A Plan to Create Millions of High-Wage Jobs in the Industries of the Future,” <http://www.johnkerry.com/issues/technology/plan.html>. (W)
- # Kerry Campaign, “Supporting Stem Cell Research to Find Cures for Millions of Americans Suffering from Debilitating Diseases,” [http://www.johnkerry.com/issues/health\\_care/stemcell.html](http://www.johnkerry.com/issues/health_care/stemcell.html). (W)

**NOTE: ON OCTOBER 18, THE FIRST SHORT PAPER IS DUE**

**8. The politics of federal science and technology programs (October 20)**

*The tension between democratically-elected officials and unelected experts in executive agencies is an enduring aspect of American politics. But this is not a simple situation. Sometimes good things result when experts in federal agencies have a great deal of autonomy from day-to-day Congressional control. This raises two important questions: how do experts get autonomy, and what circumstances affect whether they do a good or bad job when they get that freedom? To help answer these questions, we now look at a notable historical example of good things resulting from autonomy: the transformation of the U.S. Department of Agriculture in the early 20<sup>th</sup> century from a Congressionally-dominated distributor of seeds to a major scientific and technological success.*

# Daniel P. Carpenter, excerpts from “Introduction” and then “Science in the Service of Seeds: The USDA, 1862-1900” and “From Seeds to Science: The USDA as University, 1897-1917,” chapters 6 and 7 in *The Forging of Bureaucratic Autonomy: Reputations, Networks, and Policy Innovation in Executive Agencies, 1862-1928*. (R)

**9. Two cautionary tales: civilian nuclear power and the space shuttle (October 25)**

*World War II led not only to a vast expansion of federal spending on science and technology. It also ushered in an era in which Congress, Pentagon officials, and other government leaders funded large technology projects and deferred heavily to technical experts. Yet while agency autonomy sometimes led to notable successes – USDA in the early 20<sup>th</sup> century, the Manhattan Project during World War II, the Apollo Program, and the development of the Internet – political pressures and narrow agency perspectives also led to serious failures. This session looks at general political pressures and two notable failures: civilian nuclear power in the U.S. and the events leading up to the loss of the space shuttle Columbia.*

# Roger G. Noll and Linda R. Cohen, “Economics, Politics, and Government Research and Development,” chapter 6 in Kraft and Vig, editors, *Technology and Politics*. (R)

# Joseph G. Morone and Edward J. Woodhouse, “Democratic Control of Technology,” chapter 7 in *The Demise of Nuclear Energy? Lessons for Democratic Control of Technology*. (R)

# Columbia Accident Investigation Board, “Executive Summary” and chapters 5, 7, and 8 in *Report Volume 1, August 2003*. (W)

[http://www.caib.us/news/report/pdf/vol1/full/caib\\_report\\_volume1.pdf](http://www.caib.us/news/report/pdf/vol1/full/caib_report_volume1.pdf)

**10. Politics since the late 1960s: challenging the technical elites (10/27)**

*In the late 1960s and throughout the 1970s, public trust in government agencies, large corporations, and even the research community declined and opposition grew. Pollution and other negative “externalities” (side-effects) of technological activities led to this new opposition. The U.S. moved from an era of deferring to experts – an*

*era once dominated by the legendary Vannevar Bush – to a new age that demanded that technical elites in government, industry, and research pay more attention to citizen concerns and show greater accountability. The 1970s particularly saw a wave of new environmental and safety rules designed to regulate companies, agencies, and researchers.*

- # G. Pascal Zachary, excerpts from *Endless Frontier: Vannevar Bush, Engineer of the American Century*. (R)
- # Dorothy Nelkin, “Science, Technology, and Political Conflict: Analyzing the Issues,” in Nelkin, editor, *Controversy: Politics of Technical Decisions*. (R)
- # Harvey Brooks, “Controlling Technology: Risks, Costs, and Benefits,” chapter 8 in Kraft and Vig, editors, *Technology and Politics*. (R)
- # James Wilson, “The Politics of Regulation,” in chapter 2, “Regulatory Legislation: The Process of Enactment,” in Rabin, editor, *Perspectives on the Administrative Process*. (R)
- # Natural Resources Defense Council, “E-law: What Started It All.” (W)  
<http://www.nrdc.org/legislation/helaw.asp>

#### **11. The politics of research: biotechnology and nanotechnology as case studies (November 1)**

*As John Street points out in his book, to control effectively the development and use of technology requires some social control over the basic scientific and technological research that contributes to new technologies. For example, are new technologies being developed in ways that promote safety? Scientists resist any attempt to tell them what to do or how to do it, but sometimes – as in the case of early biotechnology in the 1970s – they try to opt for self-regulation rather than have regulation imposed on them. One question today is what, if anything, should be done to guide or control research and development in nanotechnology – a field that holds great promise but also raises some disturbing questions about health effects.*

- # Sheldon Krimsky, “Regulating Recombinant DNA Research and Its Applications,” chapter 12 in Nelkin, editor, *Controversy: Politics of Technical Decisions*. (R)
- # Daniel S. Greenberg, “The Political Triumph of Science” (chapter 28) and “Epilogue,” in *Science, Money, and Politics: Political Triumph and Ethical Erosion* (R)
- # Glenn Harlan Reynolds, “Forward to the Future: Nanotechnology and Regulatory Policy,” Pacific Research Institute, November 2002. (W)  
[http://www.pacificresearch.org/pub/sab/techno/forward\\_to\\_nanotech.pdf](http://www.pacificresearch.org/pub/sab/techno/forward_to_nanotech.pdf)
- # Vicki L. Colvin, “Testimony before the U.S. House of Representatives Committee on Science,” April 9, 2003. (W)  
<http://www.ruf.rice.edu/~cben/ColvinTestimony040903.shtml>

#### **12. Regulating industrial technology (November 3)**

*After the new laws of the 1970s, political battles continued over which groups – industry or citizen groups – would control industry’s use of technology and what*

rules would apply. In the 1980s, during the Reagan Administration, industry failed in its efforts to repeal the new regulatory laws. Concerned about costs and restrictions, industry leaders then focused on the regulations written pursuant to these laws. They pursued what they called “regulatory reform,” and argued that no new regulations should be issued that did not meet the tests of “cost-benefit analysis” and “risk assessment.” David Dickson and some other analysts saw this as an attempt to maintain elite control over technology, while industry groups saw it as a way to prevent unnecessary burdens and maintain U.S. industrial competitiveness. Meanwhile, Europeans began to develop a new social doctrine for controlling technology: the precautionary principle.

- # David Dickson, “Regulating Technology: Science as Legitimation,” chapter 6 in *The New Politics of Science*. (R)
- # Jeremy A. Leonard, “How Structural Costs Imposed on U.S. Manufacturers Harm Workers and Threaten Competitiveness,” 2003, a report prepared for The Manufacturing Institute of the National Association of Manufacturers. (W)  
<http://www.ruf.rice.edu/~cben/ColvinTestimony040903.shtml>
- # Chris Phoenix and Mike Treder, “Applying the Precautionary Principle to Nanotechnology,” Center for Responsible Nanotechnology, January 2003. (W)  
<http://www.crnano.org/precautionary.htm>

### **13. The politics of new technology-based industries I (November 8)**

*The preceding two classes discussed one kind of politics surrounding technology: the conflicts over environmental, health, and safety regulations. The next two classes turn to another kind of politics: the politics of new technology-based industries. According to Debra Spar, these new industries typically go from creative chaos in which pioneer firms want government to “stay out the way” to a point where those same pioneers ask government to protect their property rights and regulate competition. How does this process work, who sets the rules, and who benefits? The readings for this session focus particularly on the politics of the telegraph and early radio.*

- # Debora Spar, *Ruling the Waves: Cycles of Discovery, Chaos, and Wealth from the Compass to the Internet*, Prologue and chapters 2 and 3. (Chapters 1, 4, and 5 are optional but recommended.)

**NOTE: ON NOVEMBER 8, THE SECOND SHORT PAPER IS DUE**

### **14. The politics of new technology-based industries II (November 10)**

*Information-technology industries and particularly the Internet have become political battlegrounds, as companies and consumers alike seek rules that will help them. Spar discusses these battles. And in his reading, Lawrence Lessig argues that powerful industry groups are now trying to use the political process to rewrite traditional rules over consumer use of the Internet.*

- # Debora Spar, *Ruling the Waves: Cycles of Discovery, Chaos, and Wealth from the Compass to the Internet*, chapters 6, 7, and 8.
- # Lawrence Lessig, "The Internet under Siege," chapter 24 in Teich, editor, *Technology and the Future*, Ninth Edition. (R)

### **C. HOW TECHNOLOGY AFFECTS POLITICS**

#### **15. Technology, socioeconomic change, and the impact on politics: the case of information technology and "offshoring" (November 15)**

*The course now turns from how politics affect technology and technological activities to a discussion of how technology can change politics. The ways in which technology can change politics include: (1) changing economic relationships, which in turn affects the positions people take and the influence they have; (2) helping to shift power either within or among political institutions; and (3) affecting how people relate to each other and how, and how much, they participate in shared social and political activities. Today's class discusses an example from the first category. It looks at how information technology affects where jobs can be located today and the related politics of "offshoring".*

- # Economic Policy Institute, "EPI Issue Guide: Offshoring." (W)  
[http://www.epinet.org/issueguides/offshoring/epi\\_issue\\_guide\\_on\\_offshoring.pdf](http://www.epinet.org/issueguides/offshoring/epi_issue_guide_on_offshoring.pdf)
- # Robert Atkinson, "Meeting the Offshoring Challenge," Progressive Policy Institute, July 2004. (W)  
[http://www.ppionline.org/documents/offshoring2\\_0704.pdf](http://www.ppionline.org/documents/offshoring2_0704.pdf)
- # Office of Senator Joseph I. Lieberman, "Offshore Outsourcing and America's Competitive Edge: Losing Out in the High Technology R&D and Services Sectors," May 11, 2004. (W)  
<http://lieberman.senate.gov/newsroom/whitepapers/Offshoring.pdf>

**NOTE: ON NOVEMBER 15, ONE-PAGE PROPOSALS FOR THE COURSE'S FINAL PAPERS ARE DUE**

#### **16. Technology's impact on political institutions: two Congressional examples (November 17)**

*New technologies can also affect power within and among institutions, leading to both deliberate actions and unintended consequences. Today we look at two examples from the history of Congress. The first is the role that air conditioning played in the decline of southern Democrats, the assertiveness of northern liberal Democrats, and the eventual rise of the Republican Party in the South. The second examines how Congress, faced with declining influence over increasingly technical policy issues, created its Office of Technology Assessment in 1972 to give itself better information and more clout with executive agencies.*

- # Nelson W. Polsby, excerpts from *How Congress Evolves: Social Bases of Institutional Change*. (R)

- # Bruce Bimber, "Building OTA: The Separation of Powers," chapter 4 in *The Politics of Expertise in Congress: The Rise and Fall of the Office of Technology Assessment*. (R)

### **17. The impact of television and the Internet on political life I (November 22)**

*The enthusiasm of Americans for joining social and civic associations has always been one strong points of American democracy. Americans historically have participated in civic life and work together. But in a famous article, followed by a book, Harvard political scientist Robert Putnam argues that American participation in social and civic organizations has fallen dramatically in recent decades. He then asks, why? One major factor, he says, is television. People stay home and watch alone rather than doing things with friends and colleagues. He then asks whether the Internet will be good or bad for American democracy. Putnam's arguments have provoked both praise and criticism.*

- # Robert D. Putnam, "The Strange Disappearance of Civic America," *The American Prospect*, December 1, 1996. (W)  
<http://www.prospect.org/web/printfriendly-view.wv?id=4972>
- # Robert D. Putnam, "Against the Tide? Small Groups, Social Movements, and the Net," chapter 9 in *Bowling Alone*. (R)
- # Garry Wills, "Putnam's America," *The American Prospect*, July 17, 2000. (W)  
<http://www.prospect.org/web/printfriendly-view.wv?id=4272>

### **18. The impact of television and the Internet on political life II (November 24)**

*The popularity of Web-based organizations such as MoveOn and the apparent success of some campaign Web sites, notably Howard Dean's, has led to a debate about how new information technologies will affect political mobilization, electoral strategies, and ultimately the nature of American democracy. Today's readings echo the questions raised by Putnam, while also looking in more detail at the political effects of the Internet.*

- # Bruce Bimber, excerpts from *Information and American Democracy: Technology in the Evolution of Political Power*. (R)
- # Tara McKelvey, "Onward and Forward," *The American Prospect*, August, 1, 2004. (W) <http://www.prospect.org/web/printfriendly-view.wv?id=8119>
- # Gary Wolf, "Weapons of Mass Mobilization," *Wired*, September 2004. (W)  
<http://www.wired.com/wired/archive/12.09/moveon.html>

**NOTE: ON NOVEMBER 24, THE THIRD SHORT PAPER IS DUE**

### **19. Surveillance databases and electronic voting: their possible impacts on political life (November 29)**

*Other technologies besides the Internet can affect our sense of freedom and democracy. Since September 11, 2001, surveillance in everyday life has increased, not only through the wider use of security cameras but also through large databases that, for example, use data mining to check whether the names of air passengers are*

*on special government watch lists. And since the Florida electoral debacle in November 2000, many states have adopted electronic voting machines. But surveillance databases and e-voting are controversial, as today's readings show.*

- # Technology and Privacy Advisory Committee, U.S. Department of Defense, Cover Letter, "Executive Summary," and "Introduction," in *Safeguarding Privacy in the Fight Against Terrorism*, March 2004. (W)  
[http://www.epic.org/privacy/profiling/tia/tapac\\_report.pdf](http://www.epic.org/privacy/profiling/tia/tapac_report.pdf)
- # James X. Dempsey and Paul Rosenzweig, "Technologies That Can Protect Privacy as Information Is Shared to Combat Terrorism," Heritage Foundation, May 26, 2004 (W)  
<http://www.heritage.org/Research/HomelandDefense/loader.cfm?url=/commonsp/ot/security/getfile.cfm&PageID=63976>
- # Eric R. Fischer, "Election Reform and Electronic Voting Systems (DREs): Analysis of Security Issues," Congressional Research Service, Library of Congress, November 4, 2003. (W)  
<http://www.epic.org/privacy/voting/crsreport.pdf>
- # Kim Alexander, "E-Voting Reform: The Voting Rights Struggle of Our Time," Commonwealth Club Address, July 7, 2004. (W)  
<http://www.calvoter.org/issues/votingtech/pub/0707KACOMremarks.pdf>
- # Diebold Election Systems, "Reality vs. Fantasy: Addressing Accusations, Correcting Misinformation and Innuendo," September 2004. (W)  
<http://www.diebold.com/dieboldes/response7.pdf>

#### **D. CONCLUSION: DEMOCRACY AND TECHNOLOGY**

##### **20. Democracy and technology (December 1)**

*To conclude the course, we return to a large question: what kind of democratic control of technology – and control of its effects on society – is possible or desirable? Who makes the key decisions today about the development and use of technology – elected officials, technical experts, senior executives in government and corporations? What would a more "democratic" system of guiding technology look like, and how would it be desirable and perhaps not so desirable?*

- # Richard Slove, "Technological Politics As If Democracy Really Mattered," chapter 10 in Teich, editor, *Technology and the Future*, Ninth Edition. (R)
- # Bruce Jennings, "Representation and Participation in the Democratic Governance of Science and Technology," chapter 10 in Goggin, editor, *Governing Science and Technology in a Democracy*. (R)

#### **NOTE:**

**FINAL PAPERS ARE DUE BY 11:00 P.M. ON THURSDAY, DECEMBER 9**

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