HSD 601 – Syllabus

Professor: Clark A. Miller

Time: Fridays, 9 a.m. – 12:30 p.m.

Location: LSC-L1-02

**Course Description:**

HSD 601 and 602 form an integrated, yearlong seminar that provides theoretical and methodological foundations for PhD research in the humanistic and social study of science and technology, across a wide range of disciplinary and interdisciplinary perspectives. Readings focus on the interdisciplinary integration of four key fields of study of science and technology: conceptual and philosophical; historical; social and institutional; and policy and political. Additional emphasis will be placed on research design and methods in the humanistic and social study of science and technology. HSD 601 tends to focus more closely on the historical, philosophical, and social foundations of this field of inquiry, while HSD 602 tends to focus more on the political and policy foundations, but there is considerable overlap.

**Course Objectives:**

Upon successful completion of this class, students will have acquired an understanding of**:**

1. The basic conceptual and theoretical foundations for research and analysis in the humanistic and social studies of science and technology, including:

* *Conceptual and philosophical foundations*: problems of epistemology and ontology in science; logics and grammars of reasoning and classification; problems of evidence, objectivity, credibility, and rationality.
* *Historical foundations*: emergence and formation of scientific ideas, practices, and institutions, and technological systems; historical contexts of science and technology and their social uptake.
* *Social and institutional foundations*: social and institutional arrangements of contemporary science, e.g., the research university, the laboratory, the field; social and institutional dimensions of technological systems.
* *Political foundations*: relationships between science, technology, and the state; relationships between science, technology, and democracy.

1. The skills required to successfully integrate ideas, concepts, theories, data, and analyses from the foundational disciplines into comprehensive understandings of the human and social dimensions of science and technology.
2. Research strategies and techniques for humanistic and social studies of science and technology, including:

* The variety of research techniques and methods common to the humanistic and social studies of science and technology.
* The ethical dilemmas of humanistic and social science research in science and technology and responsible conduct of research.
* The importance of research design and the strategies involved in collecting, interpreting, and representing research materials and finding.

**Course Readings:**

Course readings will be provided on-line or through the course blackboard site, available through my.asu.edu.

**Course Requirements:**

Course Discussions and Leadership (20%): Students will lead at least two seminar discussions and come to class prepared to participate in every class meeting. When leading discussion, students will be expected to prepare an outline for the class that covers the general arguments of the assigned reading and an evaluation of the findings or conclusions.

Short Reader Response Papers (20%): Students will write a 1-2 page, typed response paper for each class session except the first. Each response paper will be based on one of the day’s readings, chosen by the student. Each response paper must have three elements: (1) a paragraph identifying the intellectual/scholarly conversation to which the selected paper seeks to contribute; (2) 1-2 paragraphs describing the contribution that the paper makes to that conversation (also known as the paper’s argument); and (3) a critical assessment of the article’s contribution/argument.

Research Project (60%): Students will complete a substantial, interdisciplinary research project. This will include a research proposal (10%), two research presentations (15%), and a research paper (35%). The research proposal must be 5 pages in length and follow a specific format, which will be described in class. The final paper must 18-20 pages in length, double-spaced, 1.25 inch margins, 12 pt. Times New Roman font, and follow the format of an article for a relevant journal. The research presentations will take place on a day to be arranged in late October or early November and on Dec. 4. Additional instructions will be forthcoming in class.

**Aug. 20 – Human and Social Dimensions of Science and Technology (HSD)**

Today’s focus will include an introduction and overview to the course and to the program and also an overview of what the program means by “the human and social dimensions of science and technology.” The readings are designed to display some of the many topics that might be explored within this emerging field. In addition, we will discuss what a research paper is and how one is written and to describe the specific research proposal and paper assignments for this semester.

Readings:

* Michael Pollan, “Out of the Kitchen, On to the Couch,” New York Times July 29, 2009. <http://www.nytimes.com/2009/08/02/magazine/02cooking-t.html?em=&pagewanted=all>
* Joe Nocera, “Risk Mismanagement,” New York Times January 2, 2009. <http://www.nytimes.com/2009/01/04/magazine/04risk-t.html?_r=1&em=&pagewanted=all>
* Steve Lohr, “Bringing Efficiency to the Infrastructure,” New York Times April 20, 2009. <http://www.nytimes.com/2009/04/30/business/energy-environment/30smart.html?hpw=&pagewanted=all>
* Cornelia Dean, “A Soldier, Taking Orders from Its Ethical Judgment Center,” New York Times November 24, 2008. <http://www.nytimes.com/2008/11/25/science/25robots.html?8dpc=&pagewanted=all>
* Dennis Overbye, “They Tried to Outsmart Wallstreet,” New York Times March 20, 2009. <http://www.nytimes.com/2009/03/10/science/10quant.html?%2334;quants=&sq=&st=cse&%2334;=&scp=1&pagewanted=all>
* Andrew Revkin, “Nobel Halo Fades Fast for Panel on Climate,” New York Times August 3, 2009. <http://www.nytimes.com/2009/08/04/science/earth/04clima.html?ref=science&pagewanted=all>
* Natalie Angier, “Scientists and Philosophers find that ‘Gene’ has a Multitude of Meanings,” New York Times November 10, 2008. <http://www.nytimes.com/2008/11/11/science/11angi.html?ref=science&pagewanted=all>

Also read:

* Clark A. Miller, “Civic Epistemologies: Constituting Knowledge and Order in Political Communities,” *Sociology Compass* 2/6 (2008): 1896-1919.

**Aug. 27 – Scholarship in the Human and Social Dimensions of Science and Technology**

In today’s session, we will pursue two tasks: (1) discuss the broad range of intellectual perspectives that comprise the field of HSD/STS and to provide a brief intellectual history of the developments; and (2) to continue to discuss what a research paper is and how one is written and to describe the specific research proposal and paper assignments for this semester.

Readings:

* Skim through a copy of the Handbook of Science & Technology Studies (either the Jasanoff et al. or the Hackett et al. volume; both are available on-line through Google Books).

**Sept. 3 – Philosophical Perspectives on Science and Technology**

Visitor: Andrew Hamilton, Assistant Professor, School of Life Sciences

Today’s session will focus specifically on philosophical perspectives on the study of science and technology. We will begin with a discussion of the readings and then will have a visitor, Andrew Hamilton, who will provide us with a personal view of this topic.

Readings:

* Andrew Hamilton, Nathan Smith, and Matthew Haber, “Social Insects and the Individuality Thesis,” <http://www.phylosophy.org/SocialInsectsProofs.pdf>
* Paul Thompson, “Value Judgments and Risk Comparisons,” Plant Physiology 132: 10-16. 2003. <http://www.plantphysiol.org/cgi/content/full/132/1/10>
* Stephen Norton and Frederick Suppe, “Why Atmospheric Modeling is Good Science,” in C. Miller and P. Edwards, eds., Changing the Atmosphere: Expert Knowledge and Environmental Governance (Cambridge: MIT Press). 2001.
* Ian Hacking, “Making Up People,” in Historical Ontology (Cambridge: Harvard University Press). 2002.
* Zachary Pirtle, Ryan Meyer, and Andrew Hamilton, “What Does It Mean When Climate Models Agree? A Case for Assessing Independence Among General Circulation Models,” *Environmental Science & Policy*, forthcoming.

**Sept. 10 – Historical Perspectives on Science and Technology**

Visitor: Karin Ellison, Associate Director, Center for Biology & Society

Today’s session will focus specifically on historical perspectives on the study of science and technology. We will begin with a discussion of the readings and then will have a visitor, Karin Ellison, who will provide us with a personal view of this topic.

Readings:

* Edmund P. Russell III, “’Speaking of Annihilation’: Mobilizing for War Against Human and Insect Enemies, 1914-1945,” *The Journal of American History* 82(4): 1505-1529, 1996.
* Jane Maienschein, “Epistemic Styles in German and American Embryology,” Science in Context 4(2): 407-427.
* Michael Dennis, “’Our First Line of Defense’: Two University Laboratories in the Postwar American State,” Isis 85: 427-455. 1994.
* Gregg Mitman, “In Search of Health: Landscape and Disease in American Environmental History,” Environmental History 10(2): 184-210. 2005.
* Paul Erickson, “Mathematical Models, Rational Choice, and the Search for Cold War Culture,” Isis 101:386-392. 2010.

**Sept. 17 – Sociological Perspectives on Science and Technology**

Visitor: Dave Conz, School of Letters and Sciences

Today’s session will focus specifically on sociological perspectives on the study of science and technology. We will begin with a discussion of the readings and then will have a visitor, Dave Conz, who will provide us with a personal view of this topic.

**The proposal for your research project is due today!**

Readings:

* Edward Hackett, “Essential Tensions: Identity, Control, and Risk in Research,” Social Studies of Science 35(5): 787-826. 2005.
* Thomas Gieryn, “Boundary Work and the Demarcation of Science from Non-Science,” American Sociological Review 48: 781-95. 1983.
* Wiebe Bijker and Trevor Pinch, “The Social Construction of Facts and Artefacts,” Social Studies of Science 14(3): 399-441. 1984.
* Stephen Hilgartner, “Biomolecular Databases: New Communication Regimes for Biology?” Science Communication 17(2): 240-263, 1995.
* Jason Owen-Smith, “Commercial Imbroglios: Proprietary Science and the Contemporary University,” in S. Frickel and K. Moore, eds. The New Political Sociology of Science (Madison: University of Wisconsin Press), 2006.

**Sept. 24 – Feminist Perspectives on Science and Technology**

Visitor: Ann Koblitz, Professor, School of Social Transformation

Today’s session will focus specifically on feminist perspectives on the study of science and technology. We will begin with a discussion of the readings and then will have a visitor, Ann Koblitz, who will provide us with a personal view of this topic.

Readings:

* Ann Hibner Koblitz, “The Dead Woman on the Table: Forensic Medicine and Criminal Abortion in Western Europe and the United States,” 1860-1930. Unpublished Manuscript. April 14, 2009.
* Charis Thompson Cussins, “Confessions of a Bioterrorist: Subject Position and Reproductive Technologies,” in E. A. Caplan and S. M. Squier, eds., Playing Dolly: Technocultural Formations, Fantasies, and Fictions (Rutgers, 1999).
* Carol Cohn, “Sex and Death in the Rational World of Defense Intellectuals,” Signs: Journal of Women in Culture and Society 12 (4): 687-718, 1987.
* Ruth Cowan, “The ‘Industrial Revolution’ in the Home: Household Technology and Social Change in the 20th Century,” Technology and Culture 17(1): 1-23, 1976.
* Nancy Campbell and Mary Margaret Fonow, “Introduction: Introducing Knowledge that Matters,” Frontiers 30(1). 2009.
* (Optional) Nancy Campbell, “Reconstructing Science and Technology Studies: Views from Standpoint Theory,” Frontiers 30(1). 2009.

**Oct. 1 – Anthropological Perspectives on Science and Technology (Lee)**

Visitor: Arthur Mason, Assistant Professor, School of Social Transformation

Today’s session will focus specifically on anthropological perspectives on the study of science and technology. We will begin with a discussion of the readings and then will have a visitor, Arthur Mason, who will provide us with a personal view of this topic.

Readings:

* Arthur Mason, “The Rise of Consultant Forecasting in Liberalized Natural Gas Markets,” Public Culture 19(2): 367-379, 2007.
* Hugh Gusterson, “Nuclear Weapons and the Other in the Western Imagination,” Cultural Anthropology 14(1): 111-143, 1999.
* Steven Epstein, “Drugs into Bodies,” Impure Science: AIDS, Activism, and the Politics of Knowledge (Berkeley: UC Press), 1996.
* Kaushik Sunder Rajan, “Genomic Capital: Public Cultures and Market Logics of Corporate Biotechnology,” Science as Culture 12(1): 87-121, 2003.

**Oct. 8 – Political and Policy Perspectives on Science and Technology (Lee)**

Visitor: Ben Hurlbut, Assistant Professor, School of Life Sciences

Today’s session will focus specifically on political and policy perspectives on the study of science and technology. We will begin with a discussion of the readings and then will have a visitor, Ben Hurlbut, who will provide us with a personal view of this topic.

Readings:

* Yaron Ezrahi, “Science, Experimental Politics, and the Culture of Democratization,” in *The Descent of Icarus* (Cambridge: Harvard University Press), 1990.
* Daniel Sarewitz, “Does Science Policy Matter?” *Issues in Science and Technology* Summer 2007.
* Jay D. Aronson, “Neuroscience and Juvenile Justice,” *Akron Law Review* pp. 917-930. 2009.
* Sheila Jasanoff, “Technologies of Humility: Citizen Participation in Governing Science,” *Minerva* 41: 223-244. 2003.
* Javier Lezaun and Martijn Groenleer, “Food Control Emergencies and the Territorialization of the European Union,” *European Integration* 28(5): 437-455, 2006.

[CONTEMPLATE REDUCING READING FOR THE CLASS AFTER THIS POINT.]

**Oct. 15 – Preliminary Research Presentations**

Today, each of you will present the intellectual/scholarly conversation to which you propose to contribute in your research paper, as well as a brief précis of your proposed contribution.

**Your first research presentation is due this week!**

**Oct. 22 – Credibility in Science and Society (Rebecca)**

Today’s session will focus on the concept of credibility – a key topic in the social studies of science and its place in society.

Readings:

* Steven Shapin, “Cordelia’s Love: Credibility and the Social Studies of Science,” Perspectives on Science 3(3): 255-275, 1995.
* Steven Shapin, “Knowing About People and Knowing About Things: A Moral History of Scientific Credibility,” A Social History of Truth: Civility and Science in Seventeenth-Century England (Chicago: University of Chicago Press), 1994.
* Michel Callon, “Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St. Brieuc Bay,” In J. Law, ed., Power, Action, Belief: A New Sociology of Knowledge (London: Routledge), 1986.
* Sheila Jasanoff, “American Exceptionalism and the Political Acknowledgement of Risk,” Daedulus 119(4): 61-81, 1990.
* Sheila Jasanoff, “The Eye of Everyman: Witnessing DNA in the Simpson Trial,” Social Studies of Science 28(5/6): 713-740, 1999.
* Theodore Porter, “US Army Engineers and the Rise of Cost-Benefit Analysis,” Trust in Numbers: The Pursuit of Objectivity in Science and Public Life (Princeton: Princeton University Press), 1995.

**Oct. 29 – Experiment in Science and Society (Marci and Doug)**

Today, we will discuss the idea of experiment. We will watch a Frontline episode on drug trials and discuss how the concept of experiment plays out in contemporary policy.

Readings:

* Steven Shapin and Simon Schaffer, “Seeing and Believing: The Experimental Production of Pneumatic Facts,” Leviathan and the Air-Pump (Princeton: Princeton University Press), 1985.
* Peter Dear, “Miracles, Experiments, and the Ordinary Course of Nature,” Isis 81: 663-683. 1990.
* Yaron Ezrahi, The Descent of Icarus: Science and the Transformation of Contemporary Society (Cambridge: Harvard University Press), 1990. Chapters 1-3.
* Arthur Daemmrich and Georg Krucken, “Risk vs. Risk: Decisionmaking Dilemmas of Drug Regulation in the United States and Germany,” Science as Culture 9(4): 505-534.
* Thomas Nickles, “Justification and Experiment,” in David Gooding, Trevor Pinch, and Simon Schaffer, The Uses of Experiment (Cambridge: Cambridge University Press), 1989.

**Nov. 5 – Classification Systems in Science and Society (Michael and Sean)**

Readings:

* Geof Bowker and Leigh Star, “The Case of Race Classification and Reclassification Under Apartheid,” Sorting Things Out: Classification and Its Consequences (Cambridge: MIT Press), 2000.
* Joseph Dumit, “Illnesses You Have to Fight to Get: Facts as Forces in Uncertain, Emergent Illnesses,” Social Science and Medicine 62(3): 577-590, 2006.
* Andrew Lakoff, “Adaptive Will: The Evolution of Attention Deficit Disorder,” Journal of the History of the Behavioral Sciences 36(2): 149-169, 2000.
* Reread Andrew Hamilton and Ian Hacking from Sept. 11 discussions.

**Nov. 12 – Technological Systems (Sean)**

Readings:

* Charles Perrow, Normal Accidents: Living with High Risk Technologies (Princeton: Princeton University Press), 1984. Chapter 1.
* Langdon Winner, “Trust and Terror: The Vulnerability of Complex Socio-Technological Systems,” Science as Culture 13(2): 155-172, 2004.
* Gabrielle Hecht, “Political Designs: Nuclear Reactors and National Policy in Postwar France,” Technology and Culture 35(3): 657-685, 1994.
* Andrew Feenberg, “From Information to Communication: The French Experience with Videotex.” Manuscript.
* Bruno Latour, “Where are the Missing Masses? The Sociology of a Few Mundane Artifacts,” in W. Bijker and J. Law, eds., Shaping Society / Building Technology (Cambridge: MIT Press), 1994.

**Nov. 19 – Progress and Determinism (Robert and Rebecca)**

Today we will discuss two key ideas in HSD that are most frequently expressed in the history of technology but crucial for many other fields as well. We will watch a PBS documentary on emerging reproductive technologies and discuss how these ideas

Readings:

* Merrit Roe Smith, “Technological Determinism in American Culture,” in M. R. Smith and L. Marx, eds., Does Technology Drive History? (MIT Press, 1994).
* Robert L. Heilbroner, “Do Machines Make History?,” and “Technological Determinism Revisited,” in M. R. Smith and L. Marx, eds., Does Technology Drive History?(MIT Press, 1994).
* Thomas P. Hughes, “Technological Momentum,” in M. R. Smith and L. Marx, eds., Does Technology Drive History? (MIT Press, 1994).
* Ronald Kline and Trevor Pinch, “Users as Agents of Technological Change: The Social Construction of the Automobile in the Rural United States,” Technology and Culture, Vol. 37, No. 4. (Oct., 1996), pp. 763-795.
* Langdon Winner, “Do Artifacts Have Politics?” in L. Winner, The Whale and the Reactor: The Search for Limits in an Age of High Technology (Chicago Univ Press, 1986).
* Leo Marx, “Does Improved Technology Mean Progress?” Technology Review 90, 1987.

**Nov. 26 – No Class**: Thanksgiving

**Dec. 3 – Final Wrap-Up Session**

No readings. We will listen to your research presentations today and review the class.

**Your research paper and second research presentation are due today!**

**Preparation for HSD 602**: During the break, your task is to identify a case study that you believe will illuminate the literature you have reviewed in HSD 601 and allow you to ask new questions about it. Please bring a one-page write-up of the case study to class on the first day of HSD 602. During the first three weeks of the semester, you will prepare a detailed outline of your research proposal based on the case study. By spring break, you will have drafted a 5-7 page short version of the proposal. The final 16 page version will be due at the end of the spring semester.