

Working Outline

EST 796-01, #52145. Advanced Topics in Environmental Studies (3)

SCIENCE, TECHNOLOGY & SUSTAINABILITY

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SUNY College of Environmental Science and Forestry
Spring 2015, Th 9:30 am – 12:20 pm, Bray 324

DESCRIPTION

Overview

This is a comprehensive, advanced graduate course in the interdisciplinary field of science and technology studies, with an emphasis on the field's relevance to and applications in the environmental social sciences and sustainability studies. Students will become familiar with foundational works, schools, and exemplary case studies within social studies of science and technology. The course is designed especially to assist doctoral students preparing for PhD Candidacy Examinations and planning advanced research in this or closely related areas. Advanced graduate students from across the social and biophysical sciences, and engineering are welcome. The course is structured as an intensive reading seminar. Each week, students will write short, critical commentaries on required readings; these essays will serve as the starting point for class discussion. At the end of semester, students will submit a comprehensive paper or proposal related to this area of study. *Prior graduate social science coursework, including in social theory, is recommended.*

Objectives

By the completion of this course, students should be able to:

- Demonstrate familiarity with foundational concepts, theories, perspectives, and debates within contemporary science and technology studies;
- Explain the relevance and application of science and technology studies to understanding the institutions, processes, and challenges for achieving greater socio-environmental sustainability; and
- Identify key methodological issues and approaches utilized in science and technology studies, both in general and in relation to socio-environmental sustainability, in particular.

Procedures

The course meets each Thursday morning during the semester. It is organized, in the first instance, as a reading seminar, with weekly readings and related short, formal essays. Commentaries are due to the instructor and all course participants *via* the course Blackboard site, no later than **8:00 am, Wednesday**, the day before the class. (Guidelines for these commentaries will be handed out separately.) Students are expected to read all commentaries as well as the required texts prior to class. Each Thursday morning, we will begin our discussion of the assigned text(s) with the commentaries.

Requirements

- Attend all class sessions;
- Read all required texts and everyone's weekly commentaries;
- Submit weekly commentaries (@ 2 pp. max.) on the required readings;
- Submit a final paper or proposal (~20 pp.) related to this area of study.

Grading

Weekly commentaries (13), 55%

Final paper or proposal, 35%

Attendance and participation, 10%

Communication

Office: 211B Marshall

Hrs.: M 12:30-1:50pm, Tu 4:00-5:20pm, & by appointment

Tel. 315.470.4931/ 6636, fax 315.470.6915

E-mail: <dsonn@esf.edu>, and <DASonnenfeld@gmail.com>

Web: <http://www.esf.edu/es/sonnenfeld>

FINAL PAPER

By the end of the course, students will submit a final paper related to this area of study. The paper may take the form of any of the following: a comprehensive field statement in preparation for the PhD Candidacy Examination; a PhD dissertation research or funding proposal; a draft journal ms. or review essay; or, with instructor's consent, another product.

Proposal. By **Week 2**, submit a proposal describing your proposed final paper for this course; typed, double-spaced, 1-2pp.

Abstract, Outline & Bibliography. By **Week 3**, submit an (abstract, if applicable,) outline, and preliminary bibliography for your final paper or proposal

Final Paper or Proposal. ~20 pp. typed, double-spaced, *plus* cover page and table of contents. Printed copy due by the beginning of the regularly scheduled **Final Exam** period for this course.

ACKNOWLEDGEMENTS

Participants in the State University of New York Faculty Development Seminar on "Teaching Sustainability," SUNY College of Environmental Science and Forestry, June 2014, provided helpful feedback and suggestions on an earlier version of portions of this outline. Thanks also to Drs. Laura Rickard, Paul Hirsch, and Cliff Davidson for their suggestions for this course.

TEXTS

Required

- Kuhn, Thomas S. 2012. *The Structure of Scientific Revolutions: 50th Anniversary Edition*. Chicago: University of Chicago Press. ISBN 978-0226458120
- Latour, Bruno. 1987. *Science in Action: How to Follow Scientists and Engineers through Society*. Cambridge, MA: Harvard University Press. ISBN 978-0674792913
- Haraway, Donna. 1989. *Primate Visions: Gender, Race and Nature in the World of Modern Science*. New York: Routledge. ISBN 978-0415902946
- Frickel, Scott. 2004. *Chemical Consequences: Environmental Mutagens, Scientist Activism, and the Rise of Genetic Toxicology*. New Brunswick, NJ: Rutgers Univ. Press. ISBN 978-0813534138
- Hughes, Thomas P. 1983. *Networks of Power: Electrification in Western Society: 1880-1930*. Baltimore: Johns Hopkins University Press. ISBN 978-0801846144
- Bijker, Wiebe. 1995. *Of Bicycles, Bakelites, and Bulbs: Toward a Theory of Sociotechnical Change*. Cambridge, MA: MIT Press. ISBN 978-0262522274
- Perrow, Charles. 1999. *Normal Accidents: Living with High-Risk Technologies*, 2nd ed. Princeton: Princeton University Press. ISBN 978-0691004129
- Hess, David. 2007. *Alternative Pathways in Science and Industry: Activism, Innovation, and the Environment in an Era of Globalization*. Cambridge, MA: MIT Press. ISBN 978-0262582728
- Grin, John, Jan Rotmans, and Johan Schot. 2010. *Transitions to Sustainable Development: New Directions in the Study of Long Term Transformative Change*. London: Routledge. ISBN 978-0415898041

Plus additional selected readings

Recommended

- Yearley, Steven. 2005. *Making Sense of Science: Understanding the Social Study of Science*. Thousand Oaks: Sage. ISBN 978-0803986923
- Huber, Joseph. 2004. *New Technologies and Environmental Innovation*. Northampton, MA: Edward Elgar. ISBN 978-1843767992
- Kleinman, Daniel Lee, and Kelly Moore. 2014. *Routledge Handbook of Science, Technology, and Society*. London: Routledge. ISBN 978-0415531528

Bookstore

ESF Virtual Bookstore, available via myESF. For further information see:

<http://www.esf.edu/students/books.htm>

COURSE OUTLINE

I. STS foundations

Week 1 – Introduction/ course overview

REQUIRED:

Kuhn, *Structure of Scientific Revolutions*

Week 2 – Science in action/ methodology

REQUIRED:

Latour, *Science in Action*

Week 3 – Science and society/ Weberian perspectives

REQUIRED:

Weber, Max. 1922 [1946]. "Science as a Vocation". In *From Max Weber: Essays in Sociology*, eds. H. H. Gerth and C. Wright Mills. New York: Oxford Univ. Press.

Habermas. 1968. "Technology and Science as 'Ideology'". In *Toward a Rational Society: Student Protest, Science, and Politics*. Boston: Beacon Press.

Week 4 – Technics and civilization/ critical theory

REQUIRED:

Marx, Karl. 1864. Selection from *Capital*, vol. 1.

Mumford, Lewis. 1934. Selection from *Technics and civilization*

Feenberg, Andrew. 1999. Selection from *Questioning Technology*. New York: Routledge.

RECOMMENDED:

Feenberg, Andrew. 1991. *Critical Theory of Technology*. New York: Oxford Univ. Press.

ADDITIONAL:

Noble, David F. 1986. *Forces of Production: A Social History of Industrial Automation*. New York: Oxford University Press.

Schnaiberg, Allan. 1990. "The role of technology: *deus ex machina* or social creation?" In *The Environment, from Surplus to Scarcity*. New York: Oxford University Press.

II. Social studies of science**Week 5 – Science and culture**

REQUIRED:

Selections from: Yearley, *Making Sense of Science*

RECOMMENDED:

Harding, Sandra. 1991. *Whose Science? Whose Knowledge? Thinking from Women's Lives*. Ithaca: Cornell University Press.

Keller, Evelyn Fox. 1985. *Reflections on Gender and Science*. New Haven: Yale UP.

ADDITIONAL:

Bowker, Geoffrey, and Susan Leigh Starr. 2000. *Sorting Things Out: Classification and Its Consequences*. Cambridge, MA: MIT Press.

Week 6 – Laboratory studies

REQUIRED:

Haraway, *Primate Visions*

RECOMMENDED:

Latour, Bruno, and Stephen Woolgar. 1986. *Laboratory Life: The Construction of Social Facts*. Princeton, NJ: Princeton University Press.

Shapin, Steven, and Simon Shaffer. 2011. *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life*. Princeton, NJ: Princeton University Press.

Week 7 – Science and politics/ citizen science

REQUIRED:

Frickel, *Chemical Consequences*

RECOMMENDED:

Corburn, Jason. 2005. *Street Science: Community Knowledge and Environmental Health Justice*. Cambridge, MA: MIT Press.

Ottinger, Gwen, and Benjamin R. Cohen, eds. 2011. *Technoscience and Environmental Justice: Expert Cultures in a Grassroots Movement*. Cambridge, MA: MIT Press.

ADDITIONAL:

Fuller, Steve. 2000. *The Governance of Science*. Philadelphia: Open University Press.

Jasanoff, Sheila. 1990. *The Fifth Branch: Science Advisers as Policymakers*. Cambridge, MA: Harvard University Press.

Schurman, Rachel A., and Dennis Kelso, eds. 2003. *Engineering Trouble: Biotechnology and Its Discontents*. Berkeley: University of California Press.

III. Social studies of technology***Week 8 – History of technology***

REQUIRED:

Hughes, *Networks of Power*

RECOMMENDED:

Tarr, Joel. 1996. *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective*. Akron, OH: University of Akron Press.

ADDITIONAL:

MacKenzie, Donald. 1990. *Inventing Accuracy*. Cambridge, MA: MIT Press.

Thomas, Robert J. 1994. *What Machines Can't Do: Politics and Technology in the Industrial Enterprise*. Berkeley: University of California Press.

SPRING BREAK***Week 9 – Social construction of technology***

REQUIRED:

Bijker, *Of Bicycles, Bakelites, and Bulbs*

RECOMMENDED:

Bijker, Wiebe, Thomas P. Hughes, and Trevor Pinch, eds. 1987. *The Social Construction of Technological Systems*. Cambridge, MA: MIT Press.

Bijker, Wiebe, and John Law, eds. 1992. *Shaping Technology/ Building Society: Studies in Sociotechnical Change*. Cambridge, MA: MIT Press.

ADDITIONAL:

Haraway, Donna. 1997. *Modest_Witness@Second_Millennium. FemaleMan@_Meets_OncoMouse™: Feminism and Technoscience*. New York: Routledge.

Wajcman, Judy. 2004. *TechnoFeminism*. Malden, MA: Polity.

Week 10 – Technological systems, complexity, risk

REQUIRED:

Perrow, *Normal Accidents*

RECOMMENDED:

Vaughn, Diane. 1997. *The Challenger Launch Decision: Risky Technology, Culture, and Deviance at NASA*. Chicago: University of Chicago Press.

IV. Science, technology, and sustainability***Week 11 – Technological environmental innovation***

REQUIRED:

Selections from: Huber, *New Technologies and Environmental Innovation*

RECOMMENDED:

Esty, Daniel C., and Andrew S. Winston. 2006. *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage*. New Haven: Yale University Press.

ADDITIONAL:

McDonough, William, and Michael Braungart. 2002. *Cradle to Cradle: Remaking the Way We Make Things*. New York: North Point Press/ Farrar, Straus and Giroux.

Week 12 – Technology, environment & social movements

REQUIRED:

Hess, *Alternative Pathways in Science and Industry*

RECOMMENDED:

Sonnenfeld, David A. 2002. "Social Movements and Ecological Modernization: the Transformation of Pulp and Paper Manufacturing," *Development and Change* 33(1): 1-27

ADDITIONAL:

Smith, Ted, David A. Sonnenfeld, and David N. Pellow, eds. 2006. *Challenging the Chip: Labor Rights and Environmental Justice in the Global Electronics Industry*. Philadelphia, PA: Temple University Press.

Week 13 – Technology, development, and sustainability

REQUIRED:

Grin, et al. *Transitions to Sustainable Development*

RECOMMENDED:

Shove, Elizabeth. 2003. *Comfort, Cleanliness and Convenience: The Social Organization of Normality*. New York: Berg.

ADDITIONAL:

Hawken, Paul, Amory Lovins, L. Hunter Lovins. 1999. *Natural Capitalism: Creating the Next Industrial Revolution*. Boston: Back Bay Books/ Little, Brown and Co.

Ashford, Nicholas A., and Ralph P. Hall. 2011. *Technology, Globalization, and Sustainable Development: Transforming the Industrial State*. New Haven: Yale U.P.

V. Conclusion and next steps***Week 14 – Open session (TBD)******Final Exam Period – Final Paper Due***