**INTRODUCTION TO SCIENCE AND TECHNOLOGY STUDIES** (Seminar, 100-200 level)

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“STS is the interdisciplinary study of how science and technology shape society and the environment, and conversely how society and the environment shape science and technology, from various perspectives in the humanities and social sciences: history, anthropology, sociology, philosophy/ethics, and political science/public policy.” –David Hess, Author (1997) Science and Technology Studies and advanced introduction

General Description:

For anyone who has ever asked questions about the world, such as “what do scientists really do”, “why do we believe this”, or “why is this the way it is” has taken the first steps toward social analysis of science, technology and medicine. This course offers an introduction to the interdisciplinary study of Science and Technology, and an introduction to the theory and techniques of the social sciences to enable students to answer their own questions about science and technology. We will learn ways to evaluate claims of expert knowledge, influences on the development of science and technology, and the way that science and technology shape our lives.

This course offers a basic introduction to interdisciplinary social science inquiry about science, technology and medicine. Readings and discussion stress developing an understanding of institutions and knowledge within technical fields that allow ongoing critical thinking about systems and expertise. It asks students to question assumptions about the reliability of knowledge and the inter-connection of the social and technical elements of the world. To ask how the technical and scientific aspects of life fit together, come to be, and what their impact is on our lives. To understand these relationships we’ll draw on the social sciences as they’ve come together in the interdisciplinary domain of Science and Technology Studies. We’ll look at how traditional disciplinary subjects like anthropology, sociology and history all contribute to a fuller understanding in part by their different methods of inquiry. The class emphasizes how social sciences share a basic commitment with the physical/natural sciences to understand the complex interplay between elements in the world, and respond to that complex interplay in different ways. Each student is put in the position of a social scientist examining the way science and technology participates in the world around them and is asked to examine scientific facts, practices, and ways of knowing. In order to do so they learning to practice the use of key methods of the social sciences and to reflexively evaluate those methods as part of the sciences as a whole.

Course Structure and Assignments:

The class is divided into two sections, the first an examination of the development of interdisciplinary study in STS is framed each week around 3 or 4 concepts/terms, and situates each in a social theoretical landscape.  During the first section lectures introduce key social theoretical concepts and their application to understanding the world, multiple empirical cases within technical, scientific, and medical culture, and serve to frame discussion to allow individual analysis by the students. Lectures and handouts provide context and clarification for the theoretical ideas while readings place them in specific contexts. Each week discussion centers on the way that these ideas are useful tools for understanding aspects of the world around us. The second section focuses each week on a distinct case or variety of empirical domain, allowing the students to attempt to mobilize the theoretical frames from the previous half of the course.

 In the second section of the course the students are provided more detailed real world examples in which they are encouraged to make their own evaluations, brief framing rather than extended lectures will be used to guide discussion, and students will be asked to focus more on independent reading and writing.

Over the course of the entire semester students will write a series of short reading responses, and will research and write a longer term project on a subject of the student's choice. They are encouraged to research a subject that engages them with thinking about the development and context of a technical or scientific phenomena whether a common daily technology, research science, or futuristic endeavor. As the course progresses students will apply theory from the toolkit of approaches and ideas examined in class to cases that they are personally engaged with, presentations and draft iterations of the term project allow improvement of communications skills, and both writing and in class discussion is moderated to promote analytic distance and clarity. Along with formal writing all students are asked to maintain a journal in which they document instances of thinking about their daily interaction with science, technology and medicine. This journal offers an opportunity to work with course concepts, to consider possible research subjects, and encourages students to actively develop an awareness and the need to evaluate and understand of the ubiquity of science, technology and medicine.

Expected Learning Outcomes:

Writing Skills- Students will develop writing skills through repetition and feedback, attention will be placed on clarity of communication and distinguishing between a personal voice (in weekly responses) and appropriate scholarly voice (in the iterations of the semester long research project).

Thinking like a Social Scientist - Students will improve their social science vocabulary and theoretical range (particularly the specific understanding of key concepts and theories to the interdisciplinary field of STS). Students will likewise be asked to develop a sensitivity to the distinctions between traditional disciplinary fields through the inclusion of multiple disciplinary readings.

Research Skills- Throughout the semester the students will be asked to work on a research project in order to develop skills at finding, evaluating, and using scholarly work. Initial problem framing and outlining are emphasized as tools to shape proper research, and their defined question or problem is used to frame individual research in the social studies of medicine.

SPECIFIC REQUIREMENTS:

READING:

·         Students are expected to complete all readings before the beginning of the class session date on which they appear on the syllabus below. Most readings will be available electronically (We will show you how to access them in the first class, and go over assignments in the first session).

·         Students are responsible for all readings listed on this syllabus except where they are specifically noted as optional.

·         Students will have the opportunity to earn extra credit by presenting in class on readings beyond those required.

·         Students are REQUIRED to purchase a copy of the text book for the first half of the course:

 Sismondo, Sergio. 2004. An Introduction to Science and Technology Studies. Blackwell.

·         All other readings will be made available through library reserve or online link:

·         During part II of the course students may choose to diverge from the suggested readings in order to tailor to individual interests; readings must be approved by the professor by the week before they are due or the student is responsible for those suggested on the list below.

WRITING:

·         10 brief (250-400 word) reading response papers are due on the day of reading discussion and must include specific references to the work discussed. Response papers are intended to enable discussion and encourage participation but also serve as a mechanism for faculty feedback, and evaluation. They will be given a grade of 0-4, and students may rewrite.

·         A semester long research project serves as a final exam, and will be assigned in three stages (preliminary proposal, first draft, final expanded draft) detailed in a class handout. The first and final drafts will receive a letter grade.

·         Students are required to maintain a journal in which they document, list, or comment about their interactions with science, technology, and medicine over the course of the semester. One entry a week is the minimum required, and the entries must make use of social science concepts. Students are encouraged to keep a more complete journal, and if the student maintains participation and demonstrates engagement with course material the journal can substitute for reading response papers with prior approval of the professor.  Journal entries must be turned in weekly for evaluation and credit.

·         Student writing will be assembled into a portfolio turned in at midterm and end of term for evaluation. Along with response papers, the portfolio will include other written exercises based on in-class handouts, notes and a compiled glossary of their understanding of key terms, as well as a bibliography/reference guide of their own reading and work.

·         NOTES: Work is due on dates listed in the syllabus. All writing is required to be typed and to include citations from course material (at a minimum).  Students will be asked to maintain a consistent citation style after in class discussion, to use a citation management system (such as Endnote, Zotero, or another of their choice), and to demonstrate improved thinking and skill in writing across the semester. All work is due in hardcopy at the start of class on the day it is to be turned in, and no work is accepted via email without prior approval.

CLASS PARTICIPATION:

·         All students are expected to participate in seminar discussion, and to demonstrate engagement with topics through reference to course materials.

·         Students are encouraged to disagree with the professor.

·         Students are expected to use gender-neutral and culturally sensitive language.

·         Each student will be permitted one unexplained absence, lateness and any further unapproved absences will be penalized in the semester grade if no official permission is provided. Each additional unacceptable absence is 1/3 of a letter grade removed from the final grade. Lateness is subtracted from the class participation section of the grade.

GRADING

20% - Class participation and oral demonstration of engagement with course concepts.
20% - Weekly Response papers
10% - Proposal for semester project and midterm portfolio evaluation.
10% - Semester Project First Draft
10% - End of term portfolio evaluation.
10% - Journal entries
20% - Final Research Paper Submission

**PART I - Overview of STS as a field & theoretical**

(This schedule is based on 14 weeks including the final exam date with either one or two class sessions per week but it will easily be modified to match Wesleyan’s Calendar. )
 **Week 0 – First Class Session: Introducing Technoscience and the Social Sciences**
Handout- What is “Science”, “technology”, and “technoscience”
Keywords: Science, Technology, Technoscience, and coproduction
Student Assignment: Introducing the journal: Students are asked to track and evaluate the points of contact in their life with technoscience, their daily interaction with science, technology, medicine, etc. Note when they make decisions based on "science" in daily life, and articulate their own initial definition of science and technology. In class they will form teams to start a list.
-Go over syllabus and handout.

Reading Hand out (to read for second class first week):
Hess, David. 1997. “If You're Thinking About Living in STS...” Pp. 143-64 in Gary Downey and Joe Dumit
(Eds.) *Cyborgs and Citadels: Anthropological Interventions in Emerging Sciences and Technologies*. Santa
 Fe, MN: School of American Research Press.

**Week 1 – What are “culture” and “society”?**
Lecture: Knowledge - How we talk, how we think, how we know
Keywords: Culture, Society, Social and Theory
Handout: Definitions of society and sociality
-Reading Discussion & go over handout.

Readings Due:
Sismondo, Sergio. 2004. An Introduction to Science and Technology Studies. Malden, MA: Blackwell.
Chapter 1, 2, & 3, “The Prehistory of S&TS”, “The Kuhnian Revolution” and “Questioning Functionalism….”.

Optional/Extra Credit: Raymond Williams “Culture” in Keywords. New York: Oxford UP, 1983), pp. 87-93
 and 236-8.  Available at: <http://pubpages.unh.edu/~dml3/880williams.htm>

**Week 2 – Core concepts of effect: Power, cause and correlation**
Lecture: What does it mean when we talk about things/ideas “doing”?
Keywords: enablement/Constraint, function/effect, meaning/being, different/normal
Handout:Reading Discussion & go over handout.

Readings Due:
Sismondo, Sergio. 2004. An Introduction to Science and Technology Studies. Malden, MA: Blackwell. Chapter 4 & 5.”Stratification and Discrimination”, “The Strong Programme.

**Week 3 -   Outline of the disciplines of the social sciences**
Lecture: Social Studies: the idea of Context/Contingency and making sense of complexity.
Keywords: “community of practice”, “disciplines”, “scientization”
Handout: Synoptic Outline of the history of culture and social theory
Handout: Professionalization, specialization and academic disciplines: Anthropology, Sociology, Philosophy and History?
Reading Discussion & go over handout.

Semester Project Proposals Due: "Defining and evaluating a techno-science assemblage" students choose something in the world, look at it as involving forms of technoscience and define parameters of evaluation, and perform a literature review in the technical discipline associated with it and media representations.

Readings Due:
Sismondo, Sergio. 2004. An Introduction to Science and Technology Studies. Malden, MA:
Chapters 6 & 12….”, “The Social Construction…” and “Standardization and Objectivity”.

**Week 4 -   Science Studies: “how we make a fact”**
Lecture: Popper, Merton, SSK and the founding of STS
Keywords: Symmetry, Reflexivity, and epistemology

Readings Due:
Sismondo, Sergio. 2004. An Introduction to Science and Technology Studies. Malden, MA:
Chapters 7 & 14, “Feminist Epistemologies of Science” and “Unnaturalness of Science and Technology”

**Week 5- Technology Studies: materiality, “the black box” and exchange**
Lecture: What do technologies mean?
Keywords: Closure, technique, and network

Readings Due:
Sismondo, Sismondo. Chapters 8 & 9, “Actor Network Theory” and “Two Questions Concerning Technology” Langdon Winner 1986 “Do artifacts have politics?” The whale and the reactor: a search for limits in an age of high technology. Chicago,University of Chicago Press, 19-39.]

**Week 6 – The “Linguistic turn” and the “Anthropological turn”**
Lecture- expanding from the theoretical to the every day
Keywords: Discourse, ethnography, Observation, and Evidence

Readings Due:
Sismondo, Sismondo. (2004) Introduction to Science and Technology Studies Chapters 10 & 13. “Studying
Laboratories” and “Rhetoric and Discourse”

Pfaffenberger. Bryan 1988. “Fetishised Objects and Humanised Nature: Towards an Anthropology of Technology”. Man, New Series, Vol.23:2, p236-252

**Week 7 – Midterm Evaluation**
Reading Discussion & go over handout.
Preliminary outline, annotated key citations, and basic description of the final project Due \*
Journal and Portfolio collected for evaluation \*

**PART II – The world with/within technoscience**

**Week 8  - Image, Evidence and Logic and surveillance**
Foucault, Michel. 1970. Pages XV- XXIV, from “Preface” in: The Order of Things an Archaeology of the Human Sciences. Vintage: NYC.

Readings:
Read the Introduction and at least the one interior chapter listed in depth from one of the following, you are not required to read the whole book. Reading more than one is acceptable for extra credit:

Dumit, Joseph. 2003. Picturing Personhood: Brain Scans and Biomedical Identity. Princeton Univ. Press: Princeton. Read Chapter 1: Introduction, Chapter 4: ways of seeing Brains as Expert Images, and Chapter 6: Conclusion.

Hansen, Burt. 2009. Picturing medical progress from Pasteur to Polio.A history of mass media images and popular attitudes in America. Rutgers Univ Press: New Brunswick. Read Introduction and \*\*\*\*

Mol, Annemarie. 2003. The Body Multiple:Ontology in Medical Practice. Duke University Press, Read Preface, Introduction, and Chapter 2.

Tucker, Jennifer. 2006. Nature Exposed: Photography as Eyewitness in Victorian Science. Johns Hopkins Press: Baltimore.  Read the introduction and Chapter 4.

Van Dijck, Jose. 2005. The Transparent Body: A Cultural Analysis of Medical Imaging. U Wash Press: Seattle. Read the introduction and student’s choice of interior chapter.

**Week 9 - TECHNOLOGICAL CHOICES- Invention, discovery, and the idea of "progress"**Video:  Who Killed The Electric Car
Reading Discussion, video discussion & go over handout.

First Draft due of final project \*

Readings:
Steve Woolgar and Geoff Cooper. 1999. “Do Artefacts Have Ambivalence? Moses’ Bridges, Winner’s Bridges and other Urban Legends in S&TS”. *Social Studies of Science*. Vol. 29: 1, 433-449

Rifkin, Jeremy “Vanishing Jobs,” [www.motherjones.com/mother\_jones/SO95/rifkin.html](http://www.motherjones.com/mother_jones/SO95/rifkin.html)

Barber,Benjamin. “Jihad vs. McWorld,” Atlantic www.theatlantic.com/politics/foreign/barberf.htm

**Week 10 SUSTAINABILITY & LARGE SCALE ISSUES**

Readings: What are we sustaining? How?
Bilger, Burkhard [The Great Oasis A plan to combat desertification.](http://www.newyorker.com/reporting/2011/12/19/111219fa_fact_bilger)
<http://www.newyorker.com/magazine/toc/2011/12/19/toc_20111212#ixzz1s36ekGp9>

“Calculate Your Ecological Footprint,” [www.lead.org/leadnet/footprint/default.htm](http://www.lead.org/leadnet/footprint/default.htm) (website)

McDonough and Braungart, “The Next Industrial Revolution,” Atlantic Monthly,
[www.theatlantic.com/issues/98oct/industry.htm](http://www.theatlantic.com/issues/98oct/industry.htm)

**Week 11 - HOUSEHOLD & "MUNDANE" TECHNOLOGIES**

Readings:
Raines, Rachel. 1989. “Socially Camouflaged Technologies: The case of the Electromechanical Vibrator”
IEEE Technology and Society Magazine, June pages-3-23, Available at
 [www.cs.utexas.edu/~karu/papers/maines2.pdf](http://www.cs.utexas.edu/~karu/papers/maines2.pdf)

Thatcher- Ulrich, Laurel. 2001. Chapter 1: Introduction, pages 11-41, in: The Age of Homespun: Objects
 and Stories in The Creation of an American Myth. Vintage (Random House): New York.

Hayden, Dolores. 2002. Chapter 4: Nurturing Home, Mom, and Apple Pie”, pages 79-120, in: Redesigning
the American Dream: Gender, Housing and Family Life. W.W. Norton & Co.: New York

**Week 12 – Medical Research, Doctors and Patients**

Readings:
Gibbs, Lois. “Love Canal: The Start of a Movement” http://www.chej.org/lovecanal.html

Epstein, Steven.1996. “Introduction: Controversy, Credibility, and Public Character of AIDS Research” pages 1- 44, in: Impure Science. University of California Press: Berkeley

Possible Alternative readings:
Landecker, Hannah. 1999. “Between Beneficence and Chattel: The Human Biological in Law and Science.” Science in Context. 12:203-225.
-OR-
Hacking, Ian. 2000. Madness: Biological or constructed? In: The Social Construction of What? Pp. 100-124

**Week 13 FINAL SESSION**

**Last opportunity for student presentations of term research project.**

**Submission of final draft of term research paper.**