HIST 31305 Medical Devices & Innovation

Spring 2019
Class meeting time:  T/TH 1:30-2:45 WALC 2127
Course Credit Hours: 3
Fulfills UNIV core requirement for Science, Technology & Society; Humanities
Fulfills Great Issues in Science, College of Science

Sharra Vostral, PhD
Associate Professor
svostral@purdue.edu
307 University Hall
office hours:  Tuesday 10:30-11:30

The course syllabus and other course materials are posted on Blackboard.

Course Description

This course examines the history of material cultures of health care in the United States. The class will analyze how technological innovation has become central to medicine over the last two centuries and how we are coping with the consequences, both intended and unintended, of our reliance upon such medical devices. We will look at identities associated with medical devices, the ways in which disease is constructed, how technologies contribute to the naming of maladies, and implications for emergent bioengineering and biotechnologies.

Learning Outcomes

Students will be able to:
• appreciate the circumstances and history of technological innovation in relation to medicine
• understand and recognize how assumptions about health influence the practice of science and development of technologies during the late 19th and 20th centuries
• analyze the design of objects to understand cultural consequences of their use
•develop skills for reading critical historical commentaries and evaluating them
•gain ability to question technological artifacts, practice, and knowledge in historical context

**Assignments** (100 points):

Individual Work
15%     Homework commentary (5 x 3 points each)
10%     Artifact Analysis
15%     Poster (abstract & poster)
20%     Design a Device Project (proposal – 5 points; individual presentation – 5; write up – 10)
10%     weekly discussion, discussion support (including leading a discussion), & participation (includes in-class and online) – 10 points

15%     Group Project – (presentation, write up, peer evaluation)
15%     Final Project

| 1/17 | 8:00 am | Homework |
|------|---------|----------|
| 1/31 | 8:00 am | Homework |
| 2/7 | 8:00 am | Homework |
| 2/14 | 11:59 pm | Design Project Proposal |
| 2/21 | 11:59 pm | Poster Abstract |
| 2/28 | 11:59 pm | Poster |
| 3/7 | 11:59 pm | Artifact Analysis |
| 3/21 | 8:00 am | Homework |
| 3/28 | 8:00 am | Homework |
| 4/2 | In-class | Group Projects |
| 4/4 | In-Class | Group Projects |
| 4/9 | 8:00 am | Homework (optional) |
| 4/16 & 4/18 | 8:00 am | Individual Presentations |
| 5/1 | 11:59 pm to BB | Final Individual Project |

Grade Scale

A 94-100%; A- 90-93%; B+ 87-89%; B 84-86%; B- 80-83%; C+ 77-79%; C 74-76%; C- 70-73%; D+ 67-69%; D 60-66%; F 0-59%

**Course Materials**

Articles available as pdfs through Blackboard.

Useful link:
Writing Lab at Purdue

**Participation**

Just showing up is not enough.  Your participation grade will reflect your overall participation in class discussions.  I will also take into account office visits in which we discuss course material.

Criteria for grading this assignment: frequency of your participation (this includes asking intelligent questions); quality of your comments; your ability to get other students talking by raising questions or debating other students directly.  **Regular and alert attendance is expected and will not qualify you for full participation points.**

**Policies**

Assignments are due at the beginning of class on the day they are due. THERE ARE NO LATE GRADES OR INCOMPLETES. You will need a note from the Dean to explain extenuating circumstances.

Missed classes: You are not eligible for an A with more than 3 absences. You may use your 3 however you wish. Attendance is required by university policy and is expected by me.

Academic Honesty
Student-teacher relationships are built on trust. For example, students must trust that teachers have made responsible decisions about the structure and content of the courses they teach, and teachers must trust that the assignments that students turn in are theirs. Acts that violate this trust undermine the educational process.

In this class, all assignments that are turned in for a grade must represent the student's own work. In cases where help was received, or teamwork was allowed, a notation on the assignment should indicate with whom you collaborated. If you have any questions concerning this policy before submitting an assignment, please ask for clarification.

The following will be considered instances of academic dishonesty: copying a paper from another student; recycling one's own or others' papers from other courses; obtaining part or all of a paper from another source other than your own research without providing quotations and citations; direct quotation from printed, electronic or online sources without providing a citation (including rewording or "patchwork plagiarism"); and the use of specific ideas and interpretations of printed or electronic sources without citation ("theft of ideas"). Any material that you quote should be placed under quotation marks and cited with a footnote or reference immediately following the quoted portion that provides the source. Do not hide plagiarism by quoting material and then adding a vague reference at the end of the text. You may discuss homework assignments with other students, and you may prepare for papers and class with other students, but the writing assignments should be your own work. If you quote any source or even take ideas from that source, the source should be referenced completely. The penalty for plagiarism can be an F in the course.

Copying of class notes: You may make a photocopy of written class notes for friends who have been absent from class for their personal use only. Any wider distribution outside the classroom, such as posting on the Internet or via a list to anyone not in this class, is prohibited and will result in an F in the course.

**In case of emergency:**
In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor's control. Here are ways to get information about changes in this course.
> Course web page (via Blackboard)
> Instructor's email (svostral@purdue.edu)

Instructor's phone (History Department, (765) 494-4132)

Schedule
*indicates scholarly article

1/8
Introductions
Artifacts, Practice, Knowledge

1/10
*Social Construction of Disease*
- *Charles Rosenberg, "Framing Disease: Illness, Society, and History," in Charles Rosenberg and Janet Golden, eds., *Framing Disease: Studies in Cultural History* (New Brunswick: Rutgers University Press, 1992), xiii-xxvi.
- *Elaine Abelson, "The Invention of Kleptomania" from Leavitt, ed., *Women and Health in America* (1999).
- Barbara Ehrenreich, "Stamping out a Dread Scourge," *Time* (2/17/92) – SATIRE

1/15
*Framing Technology*
- *Sally Wyatt, "Non-Users Also Matter: The Construction of Users and Non-Users of the Internet," in Oudshoorn and Pinch, *How Users Matter*, 67-79.
- *Lisa Rosner, *The Technological Fix: How People Use Technology to Create and Solve Problems*, intro, afterward.

1/17
*Tools & Diagnosis*
- *Adele E. Clarke, Joan H. Fujimura, "Introduction: What Tools? Which Jobs? Why Right?" *The Right Tools for the Job: At Work in Twentieth-Century Life Sciences*
- *Barbara Koenig, "The technological imperative in medical practice: the social creation of a 'routine' treatment" in *Biomedicine Examined* (465-496).
- Alix Spiegel, "How a bone disease grew to the fit the description"  NPR (12/21/09)
- Follow up: Devin Dwyer, "Supreme Court to Decide if Fosamax users can sue Merck over bone fractures" (1/7/19)
- Homework Due

1/22
*Origins of Medical Technology*
- *"Introduction: Devices, Designs and the History of Technology in Medicine," C. Timmermann & J. Anderson, in *Devices & Designs*, 1-14.
- *Stanley Joel Reiser, *Technological Medicine: The Changing World of Doctors and Patients* (Cambridge University Press, 2009): ch. 1 & 2 (p. 1-31)
- Mutter Museum in Philadelphia

- [Wellcome Institute](#)
- [Smithsonian](#)

1/24
*The Hospital and Patient Care*
- *Joel Howell, *Technology in The Hospital: Transforming Patient Care in The Early Twentieth Century* (1995), chapters 1 & 2
- Introduce poster project

1/29
Medicine in the Archives: Stephanie Schmidt
- Hold Cart Item list on BB
- Read: Laura Schmidt, "Using Archives: A Guide to Effective Research"

1/31
*Prosthetics*
- *David Serlin, *Replaceable You*, Intro, ch. 1. (1-56)
- Homework Due

2/5
*Biotechnology*
- *Robert Bud, "Biotechnology in the Twentieth Century," *Social Studies of Science* 21.3 (August 1991): 415-457.
- Speculative design *Anthony Dunne & Fiona Raby, Chap. 5 "A Methodological Playground: Fictional Worlds and Thought Experiments," in *Speculative Everything: Design, Fiction, and Social Dreaming* (Boston: MIT Press, 2013): 69-88.
- [Christine Farr, "Doctors are asking Silicon Valley engineers to spend more time in the hospital before building apps" (CNBC 12/28/18)](#)
- Introduce design project

2/7
*Biomedicalization*
- *Clarke, Adele E.; Mamo, Laura; Fosket, Jennifer Ruth; Fishman, Jennifer R.; Shim, Janet K.; Riska, Elianne. *Biomedicalization: Technoscience, Health, and Illness in the U.S*. (Durham: Duke University Press, 2009): Chapters 3
- Homework due

2/12
*X-rays*
- *Carolyn Thomas de la Peña, "'Bleaching the Ethiopians' Desegregating Race and Technology through Early X-Ray Experiments," *Technology and Culture* (January 2006): 27-55.
- *Rebecca Herzig, "Removing Roots: "North American Hiroshima Maidens" and the X

Ray," *Technology and Culture*, Volume 40, Number 4, October 1999, pp. 723-745

2/14
*Visualizing Bodies*
- *Rachel Prentice, "The Anatomy of a Surgical Simulation: The Mutual Articulation of Bodies in and through the Machine," *Social Studies of Science* 2005; 35; 837-866.
- *Rachel Prentice, "The Visible Human Project," in Sherry Turkle, editor, *The Inner History of Devices*. Cambridge, MA: MIT Press, 2008: 112-124.
- *Caroline Pelletier, Roger Kneebone, "Playful Simulations Rather Than Serious Games: Medical Simulation as a Cultural Practice," *Games and Culture*, Volume: 11 issue: 4, (2015): 365-389.
- In-Class: Poster Topics
- Design Project Proposal Due

2/19
*Microbial Self*
- *Stefan Helmreich, "*Homo Microbis*: The Human Microbiome, Figural, Literal, Political," *Thresholds* 42 (2014): 52-59
- *Kyla Schuller, "The Microbial Self: Sensation and Sympoiesis," *Resilience: A Journal of the Environmental Humanities* 5.3 (Fall 2018): 51-67.

2/21
*Technology and Identity*
- *Donna Drucker "Keying Desire: Alfred Kinsey's Use of Punched-Card Machines for Sex Research," *Journal of the History of Sexuality*, 22 (January 2013), 105-25.
- Listen: The Classification of Sex
- Poster Registration with abstract [3000 characters] due

2/26
Draft Run of Poster in class (small group critique – questions and feedback)

2/28
*Poster Session 1-3 pm*
- Meet at Purdue Memorial Union's North Ballroom
- Poster Due

3/5
*Reproductive Medicine*
- *Rayna Rapp, "Accounting for Amniocentesis" in Shirley Lindenbaum & Margaret Lock, eds. *Knowledge, Power, and Practice: the Anthropology of Medicine in Everyday Life* (University of California Press, 1993): 55-76.
- *Terri Kapsalis, "Mastering the Female Pelvis: Race and the Tools of Reproduction." In

*Skin Deep, Spirit Strong: The Black Female Body in American Culture*, ed. Kimberly Wallace-Sanders (Ann Arbor: University of Michigan Press): 2002: 263-300.

3/7
*Reproductive Medicine*
- *Nelly Oudshoorn, "Imagined Men: Representations of Masculinities in Discourses on Male Contraceptive Technology," in *Bodies of Technology: Women's Involvement with Reproductive Medicine*, eds. Ann Rudinow, Saetnan et. al. (Ohio State University Press, 2000): 123-145.
- *Matthew Schmidt and Lisa Jean Moore, "Constructing a 'Good Catch,' Picking a Winner: The Development of Technosemen and the Deconstruction of the Monolithic Male," in *Cyborg Babies: From Techno-Sex to Techno-Tots*, eds. Robbie E. Davis-Floyd and Joseph Dumit (Taylor & Francis, 1998): 21-39.
- Artifact Analysis due

Spring break

3/19
*Discovery, Property & Ownership*
- Rebecca Skloot, *The Immortal Life of Henrietta Lacks*, part 1 & 2

3/21
*Discovery & Ownership: HeLa Cell Line*
- Rebecca Skloot, *The Immortal Life of Henrietta Lacks*, part 3
- Homework Due

3/26
*Medical Devices & Regulation*
- David Worthen, "Reflections on the FDA's Intraocular Lens Regulations," *IRB: A Review of Human Subjects Research* 2.4 (April 1980): 1-3
- *David Kessler et al., "The Federal Regulation of Medical Devices," *The New England Journal of Medicine* 317.6 (August 6, 1987): 357-366.
- Kaplan, et al. "Medical Device Development: From Prototype to Regulatory Approval," *Circulation* (June 29, 2004): 3068-3072.
- Michael Hayes & Vinay Prasad, "Financial Conflicts of Interest at FDA Drug Advisory Committee Meetings, *The Hastings Center Report* (March 28, 2018): 10-13.
- Optional: Youtube tutorial FDA Regulation of Medical Devices and part 2

3/28
*Implantable Devices & Risk*
- *Lochlan Jain, *Injury: The Politics of Product Design and Safety Law in the United States*, intro, ch. 1
- Listen on Fresh Air: Are Implanted Medical Devices Creating A 'Danger Within Us'?

- "Thousands of Swedes are Implanting microchips under their skin," NPR (10/22/18)
- Homework due

4/2
Group Projects

4/4
Group Projects

4/9
*Technology & Standards*
- *Sharra Vostral, "Toxic Shock Syndrome, Tampons & Feminist Science," *Catalyst* (2017).
- The Kilogram
- Optional Homework Due

4/11
*Popular Culture & Meaning Making*
- In Class: Netflix, *The Bleeding Edge*
- Various Reviews:
  - NYT
  - Time
  - The Guardian
  - CBS News

-OR-

- In-Class for group discussion:
  - "How medical devices like pacemakers and insulin pumps can be hacked" (11/8/2018)
  - Exporting pain: U.S.-made medical devices cause serious injuries, pain overseas (NBC News 11/25/18)
  - How Profiteers Lure Women Into Often-Unneeded Surgery (NYT April 14, 2018)
  - 'Bleed Out' Shows How Medical Errors Can Have Life-Changing Consequences
  - Jeanne Lenzer, "What happens when the world's biggest medical device maker becomes a "health services provider"?" (BMJ, 11/26/18)
- Optional: Jeanne Lenzer, *The Danger Within Us: America's Untested, Unregulated Medical Device Industry and One Man's Battle to Survive It* (Little, Brown and Company, 2017).

4/16
Individual Project Presentations

4/18
Individual Project Presentations

4/23
Discussion and Closing Activity

4/25
No Class. AAHM Conference

Final project due 5/1 11:59 pm