Social and Ethical Issues in STEM*
HSCI 2423 / Section 001 (HONORS) / Spring 2015 / CRN 32768
Assistant Professor Peter Soppelsa, peter.soppelsa@ou.edu
History of Science / University of Oklahoma
Class Meeting Time/Place: MWF 9:30-10:20am, PHSC 0222
Office Hours: MW 10:30am–12:30pm, PHSC 611 (or email for appointment)

COURSE DESCRIPTION AND OBJECTIVES
This discussion-based course focuses on social and ethical issues in STEM fields, using past and present case studies as examples. The course’s first part is divided into four units—Nature, Technology, Science, and Medicine—which present science, technology, and medicine as different facets of humankind’s relationship with nature. Humans know nature through science; and manipulate, harness, and control nature through medicine and technology. In turn, nature sets real, material limits on human action. This course focuses on social and ethical issues such as: environmental impacts and disasters, technological risks and accidents, gender and race discrimination, genetic determinism, social constructivism, and medicine’s social power. In the course’s second part, unit 5, students present their final research paper topics in class. This course is reading-, discussion-, and writing-intensive, to help students sharpen basic, general academic skills.

REQUIRED TEXTBOOKS

EXPECTATIONS, POLICIES, ASSIGNMENTS
Syllabus Notes: [1] Please keep this paper copy of this syllabus. You will need to refer to it often and may want to mark it up with notes. An electronic copy with live weblinks will be available on D2L. [2] This syllabus is a working document, designed to be flexible as needed. I reserve the right to make changes to assignments, due dates, schedule, readings and so on, but I will give fair warning in advance of any changes.

Attendance/Participation: I take attendance every class. Please complete the readings before class and come prepared to discuss them. Learning is an active, group process; the more we actively participate—by both speaking and listening—the more we learn and enrich the learning environment for everyone. Your participation grade will reflect both quantity (how often you speak)

* I use “STEM” to mean “science, technology, environment, and medicine,” but the term is also commonly used to stand for “science, technology, engineering, and mathematics.”
and quality (how well you speak). Occasionally we will discuss sensitive or controversial topics. Please be respectful, courteous and civil with your classmates and the professor, be attentive and sensitive to what we have to say, and above all use common sense.

**Technology Policy:** Unless you truly need to use a computer to take notes (e.g. because of a learning disability or physical limitation), please silence and do not use electronic devices during class. Using an electronic device is distracting for you, and for others, potentially degrading the learning environment for everyone. Furthermore, education studies have shown that you learn and retain information better when you write notes by hand with pen/pencil.

**Individual Circumstances or Needs:** If you need to miss class for religious observance, let me know in advance and your absence will not affect your participation grade. If you have a learning disability, physical disability, medical condition, or any other special needs, please let me know in the first week of class, provide documentation if necessary, and I will do all I can to help meet your needs.

**Assignments and Grading:**
* This course is graded on a 1,000-point scale: A = 1,000–900 pts; B = 899–800 pts; C = 799–700 pts; D = 699–600 pts; F = 599–500 pts.
* Participation Grade (200 pts): Attendance is counted at 40 class meetings, each worth 3 points, for a total of 120 pts just for showing up. The other 80 pts evaluate your participation.
* In-Class Research Presentation (100 pts) – Week 14 or 15, details TBA on D2L

**Written Assignments:** Papers are governed by the University of Oklahoma’s Integrity Policy. Please print, date, and sign the Integrity Pledge on all assignments: [http://integrity.ou.edu/pledge.html](http://integrity.ou.edu/pledge.html). Academic misconduct, especially plagiarism, may result in: (a) resubmitting an assignment for regrading, (b) a formal warning and/or a zero on the assignment, or (c) an official complaint of academic misconduct with the Provost's office. For more on academic integrity and misconduct, see this website [http://integrity.ou.edu/index.html](http://integrity.ou.edu/index.html) and these videos: “ academic Integrity at OU” ([http://www.kaltura.com/tiny/ivbcf](http://www.kaltura.com/tiny/ivbcf)); “Protecting OU’s Academic Integrity” ([http://www.kaltura.com/tiny/11az1](http://www.kaltura.com/tiny/11az1)); “Plagiarism” ([http://www.kaltura.com/tiny/cyrr9](http://www.kaltura.com/tiny/cyrr9)).

* **1-page Weekly Response Papers** (10 x 40 pts = 400 pts) No more than 2 pages, single-spaced. These one-page responses cover the readings from a single week of class; 10 must be completed during the semester, and can be handed in during any 10 of the first 13 weeks. These papers should try to answer the following questions: (1) **Reading Comprehension:** What are the main topics covered, and what main points or arguments do the authors make? What do the readings teach about social and ethical issues in STEM? (2) **Reading Analysis:** What do you think about these arguments? Do they have problems? Do they raise further questions? How do they connect with other issues from this course, or with your own experiences?

* **10-12 page Research Paper** (200 pts) – details TBA on D2L, due Friday, May 8. Students chose their own topics. **Format:** 11-12 point font; double-spaced; 1-1.5 inch margins, works cited page. Please proofread carefully for grammar and spelling. Someone other than you—a classmate, friend, parent, or staff at the OU Writing Center—will make a better proofreader because readers always notice mistakes in writing that authors can’t or don’t see.
COURSE SCHEDULE:
Note: readings are listed under the day they are assigned, not the day they are due. They are almost always due the next class period after they are assigned.

UNIT 1: NATURE

Week 1: Humans and Nature in STEM

Mon. 1/12: Course Introduction / Unit 1 Lecture: What is Nature?

Wed. 1/14: Concepts of Nature: Unit 1 Lecture, continued / Discuss Williams

Fri. 1/16: Problematizing Wilderness: Discuss Cronon
Reading: White, Organic Machine, Intro and Ch. 1, pp. ix-29

Week 2: Concepts of, and Ethics of, Nature

Mon. 1/19: MLK HOLIDAY – NO CLASS, NO READING

Wed. 21: Knowing Nature through Labor: Discuss White, Organic Machine, Ch. 1
Reading: White, Organic Machine, Ch. 2, pp. 30-58

Fri. 1/23: Putting Nature to Work: Discuss White, Organic Machine, Ch. 2
Reading: White, Organic Machine, Ch. 3, pp. 59-88

Week 3: Harnessing Nature’s Forces

Mon. 1/26: The Power of Nature: Discuss White, Organic Machine, Ch. 3
Reading: White, Organic Machine, Ch. 4, pp. 89-113

Wed. 1/28: Ecological Consequences: Discuss White, Organic Machine, Ch. 4
Reading: Tenner, Why Things Bite Back, Ch. 1, pp. 3-32

Fri. 1/30: Unintended Consequences: Discuss Tenner Ch. 1
Reading: David Nye, "Can We Define Technology?" In Technology Matters: Questions to Live With (MIT, 2006), 1-15 (PDF on D2L).

UNIT 2: TECHNOLOGY

Week 4: Politics of Technology
Mon. 2/2: **Unit 2 Lecture: What is Technology?** / Discuss Nye reading

Wed. 2/4: Politics of Technology: Discuss Mumford and Winner
Reading: Tenner, *Why Things Bite Back*, Ch. 4, pp. 90-120

Fri. 2/6: Environmental Disasters, Natural and Human-Made: Discuss Tenner Ch. 4
Reading: Tenner, *Why Things Bite Back*, Ch. 5, pp. 121-147

**Week 5: Using and Abusing Pests**

Mon. 2/9: Promoting Pests? Discuss Tenner Ch. 5
Reading: Tenner, *Why Things Bite Back*, Ch. 6, pp. 148-178

Wed. 2/11: Animal Pests: Discuss Tenner Ch. 6
Reading: Tenner, *Why Things Bite Back*, Ch. 7, pp. 179-205

Fri. 2/13: Vegetable Pests: Discuss Tenner Ch. 7
Reading: Tenner, *Why Things Bite Back*, Ch. 8, pp. 206-234

**Week 6: Technologies at Work and at Play**

Mon. 2/16: Work-Related Injury: Discuss Tenner Ch. 8
Reading: Tenner, *Why Things Bite Back*, Ch. 9, pp. 235-267

Wed. 2/18: More or Less Productive? Discuss Tenner Ch. 9
Reading: Tenner, *Why Things Bite Back*, Ch. 10-11, pp. 268-324

Fri. 2/20: The Risks of Sports: Discuss Tenner Ch. 10-11

**UNIT 3: SCIENCE**

**Week 7: Science and Human Difference (Race, Gender, Multiculturalism)**

Mon. 2/23: **Unit 3 Lecture: What is Science?**
*(What are Epistemology and Multiculturalism? How are they connected?)*
Reading: Harding, *Is Science Multicultural*, Ch. 3, pp. 39-54

Wed. 2/25: Discuss Harding, Ch. 3
Reading: Harding, *Is Science Multicultural*, Ch. 4, pp. 55-72

Fri. 2/27: Discuss Harding, Ch. 4
Reading: Harding, *Is Science Multicultural*, Ch. 5, pp. 73-88

**Week 8: Politics of Science**

Mon. 3/2: Discuss Harding, Ch. 5  
Reading: Harding, *Is Science Multicultural*, Ch. 6, pp. 89-104

Wed. 3/4: Discuss Harding, Ch. 6  
Reading: Harding, *Is Science Multicultural*, Ch. 7, pp. 105-123

Fri. 3/6: Discuss Harding, Ch. 7  
Reading: Harding, *Is Science Multicultural*, Ch. 8, pp. 124-145

**Week 9: Politics of Science**

Mon. 3/9: Discuss Harding, Ch. 8  
Reading: Harding, *Is Science Multicultural*, Ch. 9, pp. 146-164

Wed. 3/11: Discuss Harding, Ch. 9  

Fri. 3/13: Discuss Harding, Chs. 10-11  
*** Research Paper Proposal Due *** No readings over the break ***

**Week 10: SPRING BREAK – NO CLASS**

**UNIT 4: MEDICINE**

**Week 11: Medicine, Pt. 1**

Mon. 3/23: Unit 4 Lecture: What is Medicine? What is Disease?  
Reading: Tenner, *Why Things Bite Back*, Ch. 2, pp. 33-59

Wed. 3/25: Curing Acute Diseases: Discuss Tenner, Ch. 2  
Reading: Tenner, *Why Things Bite Back*, Ch. 3, pp. 60-89

Fri. 3/27: Suffering Chronic Diseases: Discuss Tenner, Ch. 3  
Reading: Alcabes, *Dread*, Introduction and Ch. 1, pp. 1-20

**Week 12: Dreading Diseases: Fear, Culture, and Politics**

Mon. 3/30: Creating Disease Scares: Discuss Alcabes, Intro + Ch. 1  
Reading: Alcabes, *Dread*, Ch. 2, pp. 21-52

Wed. 4/1: Plague, the Original Scourge: Discuss Alcabes Ch. 2
Reading: Alcabes, *Dread*, Ch. 3, pp. 53-82

Fri. 4/3: Cholera, Poverty, and Politics (the 1800s): Discuss Alcabes Ch. 3
Reading: Alcabes, *Dread*, Ch. 4, pp. 83-118

**Week 13: Dreading Diseases pt. 2**

Mon. 4/6: Disease and Immigration (around 1900): Discuss Alcabes Ch. 4
Reading: Alcabes, *Dread*, Ch. 5, pp. 119-142

Wed. 4/8: Disease and Sexuality (the 1900s): Discuss Alcabes Ch. 5
Reading: Alcabes, *Dread*, Ch. 6, pp. 143-180

Fri. 4/10: “Postmodern Epidemics” (the 1970s): Discuss Alcabes Ch. 6
Reading: Alcabes, *Dread*, Ch. 7 + Epilogue, pp. 181-230

**UNIT 5: STUDENT RESEARCH PAPERS & PRESENTATIONS**

**Week 14: Final Discussion/Student Research**

Mon. 4/13: Ebola and Beyond (the present): Discuss Alcabes, Ch. 7 + Epilogue

Wed. 4/15: Student Research Presentations

Fri. 4/17: Student Research Presentations

**Week 15: Student Research**

Mon. 4/20: Student Research Presentations (if needed) / Extended Office Hours

Wed. 4/22: Student Research Presentations (if needed) / Extended Office Hours

Fri. 4/23: Student Research Presentations (if needed) / Extended Office Hours

**Week 16: “Dead Week”**

**Week 17: Finals Week: Final Papers due by end of day, Friday, May 8, 2014**