

SCIENCE, TECHNOLOGY & HUMAN VALUES

Philosophy of Science & Technology/PST 3127-AL
Spring 2008, Tuesday, Thursday 12:05-1:25 pm
Sustainable Education (SEB) 316

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Office hours: Wednesday 2:00-3:30 PM or by appt

Catalog Description:

Exploration of the boundaries between science, religion, and social values, examining science and technology in a broader social context. Examines claims that science is isolated from social problems and values.

Expanded Description:

We live in an increasingly science and technology-driven world and, by necessity, make scientific and technological decisions every day. When you choose what to eat or buy today or how to vote in local or national elections, you are making, in part, scientific and technological decisions. In the future, in your work life, you may be involved in scientific and technological decision-making on a larger scale, perhaps influencing purchasing at a large corporation or helping develop or design new products.

Scientific and technological concerns often drive these decisions, but rarely will they tell the whole story. Indeed, in this course we will explore how a range of other factors, ranging from large-scale financial or political forces to the preferences or biases of a single individual, influence scientific and technological development. In addition, we will also examine how scientific and technological decisions may incorporate, either deliberately or by chance, specific values into the very structure of our modern world.

This course is designed to help you think about how and when science and technology are influenced by social concerns and, conversely, how science and technology influence society. To do this, we will take a multidisciplinary approach to the study of the scientific and technological enterprise as a whole as well as a variety of individual technologies. Specifically we will draw on insights from philosophy (primarily through the use of various ethical theories to frame our thinking), sociology, history, and public policy, among other disciplines.

When you finish this course, you should be able:

- Identify social factors that influence the development of science and technology
- Assess the impact of these factors on various technologies
- Think systematically about the direct and indirect impacts of scientific and technological decision-making
- Analyze scientific and technological decisions using a variety of ethical frameworks

Course Format:

We meet for two eighty minute periods each week. Typically half of each meeting will be used for the presentation of new course material, with the remainder of class reserved for discussion of the week's reading, relevant current events or student presentations.

Summary of Course Requirements:

	Requirement	Percent of Grade	Exam Date or Assignment Due Date
1	Test #1	10%	February 12, in-class
2	Test #2	10%	March 11, in-class
3	Test #3 / "Final"	10%	May 1 at 8 am – 10:50 am
4	Paper #1 (Ethical Reasoning)	10%	February 5 by 10pm (electronic submission on t-square)
5	Paper #2 (Technology Development)	20%	April 10 by 10pm (electronic submission on t-square)
7	Group Presentation	20%	Varies
8	Attendance and Participation	20%	

Detailed Descriptions of Course Requirements:

1, 2, and 3 – Tests

Test will be in-class, short answer and short essay format. They will require thoughtful integration of material from lectures, discussion, readings, student presentations and other materials presented in class, along with your own original reflection and analysis. You will be graded on accuracy, breadth, clarity, and originality.

4 – Paper #1 (Ethical Reasoning)

In this paper you will practice applying some of the ethical theories we will discuss in class to specific scientific decisions. Specifically, you will analyze a hypothetical scientific decision using two different ethical theories and write a concise (<600 words), well-structured, and coherent essay comparing and contrasting the outcomes of these analyses. More details about this assignment, including a choice of topics, will be provided in class and posted on T-Square.

5 – Paper #2 (Technology Development)

In this paper, you will examine how societal concerns and human values have shaped the development of a particular area of science or technology. You are free to choose any area of science or technology that is of interest to you. In the paper you should craft a thesis and present evidence from a range of sources to support your thesis. The paper should be no longer than 1500 words (excluding references). Because this assignment will require external research, you are encouraged to choose your topic and begin gathering sources well in advance of the due date. You are also required to submit a one-page paper proposal one month before the due date. In this proposal, you should identify the area of science or technology you have selected, and provide a tentative thesis for your paper along with short descriptions (~1-2 sentences) of some of the lines of evidence you plan to present to support your thesis. Your proposal should also include a list of key sources. More details about this assignment will be provided in class and posted on T-Square.

6 – Group Presentation

Starting approximately halfway through the semester, we will dedicate class time to student presentations on a variety of controversial scientific and technological issues. Working as part of a team of three or four students, you will research both sides of a specific issue and prepare an approximately 15-minute presentation introducing the issue, highlighting the strongest arguments on each side of the issue, and offering a tentative recommendation or resolution.

You will be assigned to a group early in the semester based on your rankings of potential presentation topics. You will need to meet with your group outside of class to prepare your presentation. More details about this assignment will be provided in class and posted on T-Square.

8 – Attendance and Participation

This includes attendance (on-time), participation in discussion and other class activities, and the degree to which students come to the course prepared to engage the material, their classmates, and the subject at hand.

Attendance and participation will be assessed through a variety of means, including your participation in class discussion, your contributions to other class activities, and unannounced quizzes randomly distributed throughout the semester. These quizzes will focus on basic material from the day's reading assignment and, on occasion, key points from the previous class. You will be permitted to drop your two lowest scoring quizzes.

Participation in class, both in discussion and other activities, is a critical component of your and your classmate's learning experiences. We will discuss controversial issues and you will be asked to think about difficult decisions. You may not always agree with your classmates. This is fine. The ground rules for discussion are that you should always show respect for each other, and when you disagree, address the idea, not the person.

Course Policies:

Reading: Reading form a key component of this class and you should expect to have reading assignments for most class meetings. I have aimed to keep the reading assignments relatively short, however. In exchange, I expect that you will complete the reading before class and come to class prepared to discuss it. Preparation for discussion means that, at the least, you should be able to briefly summarize each of the readings for your classmates and highlight one to two short passages from each reading that you believe are central to understanding the reading.

Atmosphere: To maintain a professional and collegial atmosphere, I ask that you arrive on time to class and keep disruptions during class to a minimum. For instance, I expect that cell phones and other similar devices will be turned off during class. I will strive to end class in a timely manner. You are welcome to use your laptops in class to take notes or for educational classroom activities (such as our discussions of current events). Please refrain, however, from using your laptop for purposes not related to class. If laptop use becomes a distraction, it may become necessary to prohibit their use in class.

Communication: Email is the best way to contact me and I will try to respond promptly, usually within 24 hours. I check email less frequently on the weekend and may not be able to respond to inquiries until Monday. You are, of course, encouraged to ask questions before or after class or stop by my office hours. If my office hours are not convenient for your schedule and you would like to meet, please email me to arrange an alternate time.

T-Square: This course will use T-Square, to organize electronic materials. You should find copies of lecture outlines, key questions, links to electronic versions of readings, etc. Most writing assignments will be submitted electronically using T-Square. We will go over this process during class, but if you have questions, please let me know.

Late Papers: Paper due dates are announced far in advance and, in the absence of formally documented extenuating circumstances, you are expected to submit papers on time. Late papers will be accepted electronically on T-Square until 2 days (48 hours) after the due date, but they will be penalized ½ a grade per day or portion of a day they are late. Papers will not be accepted more than 2 days after the due date.

Students with Disabilities: Georgia Tech offers accommodations to students with disabilities. If you need a classroom accommodation, please make an appointment with the ADAPTS office or provide me with the appropriate ADAPTS paperwork in office hours.

Honor Code: You are expected to abide by the Georgia Tech Honor Code guidelines at all times (for details, see <http://www.honor.gatech.edu/>). In the context of this course, quizzes should be completed on your own without any unauthorized aids. While we will brainstorm topics and discuss outlines for your papers in class, all writing is expected to represent your own work, completed on your own specifically for this course. This means that you cannot copy text from other papers, websites, encyclopedias, etc without quoting any copied material and fully and accurately citing your sources. In addition, if you refer to, use, or build upon ideas from other work, even if you don't quote that work exactly, you should fully acknowledge your sources. For the presentations, you are expected to work together both on the preparation of written or visual aids and in the delivery of the presentation itself. As for the papers, however, it is important to reference your sources appropriately. For any questions involving these or any other Academic Honor Code issues, please consult me or see <http://www.honor.gatech.edu/>.

Readings:

Books (Required)

1. *Elements of Moral Philosophy* by James Rachels and Stuart Rachels, McGraw-Hill (2006), 5th Edition, 240 pages
2. *An Enemy of the People* by Henrik Ibsen, Dover Thrift Edition (1999) 96 pages
3. *The World Without Us* by Alan Weisman, Thomas Dunne Books (2007), 324 pages
4. *Mountains Beyond Mountains: The Quest of Dr. Paul Farmer, A Man Who Would Cure the World* by Tracy Kidder, Random House Trade Paperbacks (2004) 317 pages

Other (Class reserves or handed out in class) – More may be added

The Belmont Report. "Ethical Principles and Guidelines for the Protection of Human Subjects of Research" The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. April 1979.

Greenberg, Daniel S. (2003) *Science, Politics and Money: Political Triumph and Ethical Erosion*. University of Chicago Press. Selections.

Tips for Success:

Doing well in this course requires some time and effort, but the class shouldn't be overwhelming. Tips for doing well include completing and thinking about the reading

before class and coming to each class with an open mind, prepared to discuss and debate a range of issues. You are also advised to start your papers early. I strongly recommend giving yourself time to look over and revise all of your writing before submitting it. Finally if you are unclear about any class material, be sure to ask questions either in class or office hours to clarify any confusion.

A Final Comment:

I hope you find this class interesting, relevant to your lives, and even (at times) fun. If you have any comments about how the course is or is not working for you or suggestions about how the course could work better for you, please let me know.

Detailed Schedule (Subject to Change)

Week 1: Introduction / Course overview

Jan 8: – Introduction & syllabus review

Jan 10 – Introductory discussion: Science, Technology & Privacy

Week 2: Introduction to Ethical Theories

Jan 15 – What is Science? / Introduction to Ethical Reasoning
[Reading] Rachels, Chapter 1 “What is Morality?” (15 pages)

Jan 17 – Cultural Relativism
[Reading] Rachels, Chapter 2 “The Challenge of Cultural Relativism” (20 pages)

Week 3: Consequentialism

Jan 22 – Ethical Egoism & Utilitarianism
[Reading] Rachels, Chapter 6 “The Utilitarian Approach” (10 pages)
[Optional Reading] Rachels, Chapter 5 “Ethical Egoism” (20 pages)

Jan 24 – Utilitarianism (Cont’d)
[Reading] Rachels, Chapter 7 “The Debate over Utilitarianism” (16 pages)

Week 4: Non-Consequentialism

Jan 29 – Kant’s Moral Philosophy
[Reading] Rachels, Chapter 8 “Are there Absolute Moral Rules?” (12 pages)
[Optional Reading] Rachels, Chapter 9 “Kant & Respect for Persons” (10 pages)

Jan 31 – Social Contract Theory
[Reading] Rachels, Chapter 10 “The Idea of a Social Contract” (19 pages)

Week 5: Ethics Wrap-up & Discussion of Ibsen's *An Enemy of the People*

Feb 5 – Virtue Ethics

[Reading] Rachels, Chapter 12 “The Ethics of Virtue” (17 pages)

[Assignment] Paper #1 Due (Topic: Ethical Reasoning)

Feb 7 – Discussion of *An Enemy of the People*

[Reading] Ibsen, Acts I to V (82 pages)

Week 6: Norms of Science

Feb 12

[Test] Test #1 In-class

Feb 14 – Merton's Norms of Science

[Reading] Weisman, Prelude through Chapter 3, Chapter 5 (52 pages)

Week 7: Politics of Science

Feb 19:

[Reading] Greenberg Chapter 10, 12 (35 pages)

Feb 21:

[Reading] Weisman Chapter 7 through Chapter 9 (37 pages)

Week 8: The Business of Science

Feb 26 –

[Reading] TBD

Feb 28:

[Reading] Weisman Chapter 12, 13, 15 (36 pages)

Note: Feb 29 is the last day to drop classes with a grade of 'W'

Week 9: Public Understanding of Science

Mar 4:

[Reading] Greenberg Chapter 13 (28 pages)

Mar 6:

[Reading] Weisman Chapter 16, 19, Coda (31 pages)

Week 10:

Mar 11:

[Test] Test #2 In-class

Mar 13: Discussion of Paper Proposals

[Assignment] Proposal for Paper #2 Due In-class

Week 11 - SPRING BREAK

Note: You may want to take advantage of this time to start the upcoming reading. The assignments in *Mountains Beyond Mountains* are the longest of the semester.

Week 12: Limits on Science 1

Mar 25 – Research on Human Subjects
[Reading] Belmont Report [Available on T-Square]

Mar 27:
[Reading] Kidder Chapters 1 through 12 (121 pages)
[Student Presentations]

Week 13: Limits on Science 2

Apr 1 – Dual Use Research
[Reading] Kidder Chapters 13 through 19 (52 pages)

Apr 3:
[Reading] Kidder Chapters 20 through 23 (56 pages)
[Student Presentations]

Week 14: Catch-up

Apr 8:
[Reading] Kidder Chapter 24 through Afterword (61 pages)

Apr 10:
[Assignment] Paper #2 Due (Topic: Technology Development)

Week 15: Student Presentations

Apr 15:
[Student Presentations]

Apr 17:
[Student Presentations]

Week 16: Review / Wrap-up

Apr 22:
Politics, Policy & Human embryonic stem cell research – final case study

Apr 24:
[Assignment] Bring questions for review

Final Exam: Thursday, May 1 at 8:00 am