

Science, Technology, and Public Affairs
PAF547/GLG598/BIO598/HON494
Spring 2005

Professors: Michael Crow, Daniel Sarewitz

Teaching Assistant: Lindy Stanford

Time: Wednesday 7:40 a.m.- 10:30 a.m.

Place: Foundation 4440 (If the Foundation Building is not open at the beginning of the semester, classes will be held in Coor 5536.)

Office Hours:

Sarewitz: Thursdays, 2 p.m. – 4 p.m., or by appointment. 203B Social Sciences Bldg.
dsarewitz@asu.edu; 480-727-8831.

Crow: By appointment, michael.crow@asu.edu; 480-965-8972

Stanford: Wednesday 11:00 a.m. – 12:00 p.m., or by appointment. 204 Social Sciences Bldg. Lindy.stanford@asu.edu; 480-727-8787.

Course description: This class will explore the political, economic, cultural, and moral foundations of science and technology governance in democratic society. Science and technology are the most powerful transforming forces in the world today. We will investigate, from a variety of perspectives, the ways in which this transforming force is influenced by decisions that humans make about priorities, organization, direction, and rate of advance of scientific knowledge and technological innovation.

Course requirements: One group project (3 students per group) leading to a written paper and oral presentation, and a take-home final exam. All students are expected to participate in class discussions. Each week, three students will be assigned to help lead the class discussion by presenting critical questions based on the readings, and two students will contribute to the discussion by presenting a relevant and current news item for consideration by the class. Questions and news items will be posted to the class website prior to the class. In addition, all students are expected to keep up with current issues in science, technology, and public affairs through daily reading of the *New York Times* and/or *Arizona Republic*.

Students are expected to carefully read all required readings listed in the syllabus, and to skim additional readings for important concepts and themes. Thomas Kuhn's *Structure of Scientific Revolutions* must be read by all students as a foundation for the course, although it is not specifically listed for any class session. Classes will be centered around group discussions of the issues and themes raised in the readings, and will include little formal lecture.

Grading:

Final exam: 45 percent

Project: 35 percent (25 percent for written portion; 10 percent for oral portion)

Participation: 20 percent

Project: A significant part of each student's work for this course will be focused on a group project leading to a written paper and an oral presentation. Students will work in groups of three (and, if necessary, four). The projects are in-depth assessments of a particular technology that is currently "in the news." The assessments will have three basic components:

1. Retrospective assessment, addressing such questions as: what are the social, scientific and technological origins of the technology? How did the technology evolve over time? What motivated development of the technology? What was the role of government, private sector, and other players in the past development of the technology? What were the costs of developing the technology? How was the technology transferred from laboratory to user? What social and economic forces shaped the technology? What social and economic implications were anticipated? What social and economic outcomes actually occurred? What political or social conflicts (if any) arose around the technology? Who supported the technology, and who opposed it? Who has benefited from the technology, and who has not? Etc.
2. Present-day assessment, addressing such questions as: How much is currently being invested in development of the technology? Where is the research and development being conducted (specific institutions, and sectors)? What is the role of government, private sector, and other players in the development of the technology? How is the technology being transferred from laboratory to user? What are the current social and economic forces shaping the evolution of the technology? What are the current social and economic impacts of the technology? What political or social conflicts are related to the technology? How is the technology being regulated by the government or otherwise governed by society? Etc.
3. Future assessment: How is this technology expected to evolve in the future? What are its most important future applications expected to be, and what are the possible social implications from these applications? What types of unexpected outcomes and applications might derive from the technology? What social and economic forces are likely to be involved in shaping the technology? What types of mechanisms, if any, are likely to be necessary to adequately govern this technology and its impacts on society?
4. Recommendations: The final section of the project should make recommendations about the future of the technology, including: levels of investment; sectors that should be involved; choices about what directions innovation should be steered; oversight, governance and regulatory needs and options; etc.

To maximize interdisciplinary interaction, students will be assigned to groups. Lindy Stanford will coordinate the choice of technologies to ensure that each group is studying a different technology.

Groups may choose any technology that is "in the news," but the selected technology needs to be, on the one hand, sufficiently broad so that there is enough information available to do an effective assessment, but not so broad as to be unmanageable.

“Nanotechnology,” is too broad. “Carbon nanotubes” is too narrow. Groups should consult with the professors and with the teaching assistant if they have questions about the appropriate scale for analysis.

The schedule for the projects is as follows:

Class two (Jan. 26): groups are assigned.

Class four (Feb. 9): project proposals are due. These should include a brief (2-4 page) description of the scope of the project and the sources that will be used, plus an annotated bibliography of potential sources (2-4 additional pages).

Class nine (March 23): Project draft due. This should be a complete first draft, with references, of the project paper. Most of important issues should be identified and discussed, with remaining research questions highlighted. A comprehensive reference list should also be included.

Class 12 (April 13): Final project paper due.

Class 13 and 14 (April 20, 27): Project presentations.