ISSS 4V86: Special Topics: Science, Technology and Society CV Honors

Professor(s):	E. Elliott	**Office Phone:**	972-883-2066
Term:	Spring 2012	**Office Location:**	GR 3.214
Class Meetings:	T/R 2:30-3:45 pm	**Office Hours:**	1-2 pm T/R
Classroom:	GC 1.208B	**Email Address:**	eelliott@utdallas.edu

General Course Information

Course Description

Technology and science have always been a driving force in shaping the world in which we live. Culture, politics and economics are deeply influenced by such changes. From the advent of the printing press to the steam engine, the development of mass production techniques in the 19th century, the commercial application of electricity, all have helped profoundly shape the modern milieu. More recently, the development of the computer and later, the ability to link countless computers through the Internet have helped transform markets, as we have moved from the industrial age to the information age systems of production and distribution.

We have only begun to witness the kinds of changes to the economy and to society brought on by the ongoing revolutions in computing and information technology, genetics research and biotechnology, robotics and nanotechnologies and various life extension technologies. These transformational changes create great opportunities, and challenges.

This course, offered for the first time, is designed as an interdisciplinary/ multidisciplinary offering that explores how science and technology have changed our world, paying particular attention to the linkages between science, technology and the impact on the broader society. While the core of the course is built around a series of modules that examine different cutting edge technologies and the broader implications for society, the class begins by explaining the deep interconnections between science and the scientific enterprise, and the larger culture.

We examine the interaction of science and technology with the broader society in the 19th and 20th centuries, then move to a wide ranging discussion of the future of computing and artificial intelligence, robotics, the genetics revolution, nanotechnology and other topics. Important issues relating to the relationships between technological advances and its impact upon values and ethics at the societal level are discussed with the aim that students will come away with a greater appreciation of the challenges as well as opportunities technology may provide. We also discuss the prevalence of scientific skepticism and, indeed, hostility toward science and technology by broad segments of the public.

This course will be taught using a combination of lecture and class discussion, with the particular weight depending upon class size. Various guest lectures and presentations will also be arranged over the course of the semester.

Required Books

Ferris, Timothy. 2009. The Science of Liberty. New York. Harper Collins (selected chapters)

Shirky, Clay. 2010. Cognitive Surplus. NY: The Penguin Press

Specter, Michael. 2009. Denialism. NY: The Penguin Press

Recommended Reading

Dyson, George B. 1997. Darwin Among the Machines. New York: Addison Wesley

Schmidt, Stanley. 2008. The Coming Convergence. New York: Prometheus Press

Glassner, Jean-Jaeques, Zainah Bahrani or Marc Van de Meire. 2005. The Invention of Cuneiform: Writing in Sumer. Baltimore:Johns Hopkins University Press

Usher, Abbott Payton. 1998. A History of Mechanical Invention. New York: Dover Publications

Kelly, Kevin. 2010. What Technology Wants. NY: Viking

Course Objectives

1. To provide students with an appreciation of the relationship between science and technology, on the one hand, and the profound impact advances in science and technology have had and will have on culture, economics, policy and society as a whole
2. To provide students with a greater appreciation of the scientific and technological achievements of the recent past and contemporary periods, and the profound ways these advances shape the modern world.
3. To provide students with an appreciation and understanding of important moral and ethical issues related to science and technology.

Course Requirements

1. There will be a take-home mid-term worth 30% of your grade. The mid-term exam will be due February 28. Late exams will be penalized.
2. Several 15-20 minute quizzes will be given periodically over the course of the semester. There will be five or six such quizzes, of which the lowest grade will be dropped. Approximately half the quizzes will be announced ahead of time. The quizzes will be worth 20 percent of your grade.
3. All students will prepare a 10-12 page research essay, worth 30 percent of your grade, of which there are two options: (a) write an essay organized around one of the topics covered in the presentations sponsored by the Center for Values in Medicine, Science and Technology, the schedule of which is attached at the end of this document, or (b) write an essay, of similar length as above, that explores the implications for society of some new scientific or technological advance; such a paper can focus on current "cutting edge" scientific discussions or innovations, or prospective innovations. Such a paper would be expected to explore the possible economic, social, cultural and ethical implications. In both cases a and b, students would be expected to incorporate sources to buttress their arguments. Regarding the first case, at least five sources should be used. As for the second option, 10-12 sources should be utilized. Sources should be restricted to books or peer reviewed articles, for the most part, although journals of opinion and newspapers, particularly major newspapers, may be used sparingly (described as 25 percent or less of the total number of citations). The instructor will discuss the requirements in more detail throughout the semester. Paper is due Monday, May 8.

Note: Papers submitted after the deadline will be penalized.

4. Class participation will be worth 20 percent of your grade. This will consist of general class participation, as well as a 15-20 minute group presentation

covering some aspect of your course readings. Each student will participate in such a group exercise at least once during the semester. Other participation may be required, depending upon enrollment. Also, attendance at CVMST events will also count toward your grade. The instructor will say more about this at the first class meeting on January 17. The following distribution of points is as follows:

Midterm Exam	30%
Quizzes	20%
Research Paper	30%
Participation	20%
	100%

Note: Please use APSA style citation. References are embedded in the text, within parenthesis (last name, date) or as necessary (last name, date, page number). The complete references should be included on a separate bibliography page. A copy of APSA style article is available through e-Reserve

Schedule

Please note that the schedule is subject to change due to the speakers' schedules as well as other unforeseeable events. Also, several visitors will be on campus this semester, and they will be participating when possible. In addition, note that we will be discussing CVMST lectures as they take place even though the theme of the lecture or presentation may be at variance with the topics covered in the readings for that week.

January 17	**Introduction to the Course**
January 19-24	**Historical Contours of the Science and Societal Nexus** **Readings:** Merton, Robert. 1941. The Normative Structure of Science, from The Sociology of Science: Theoretical and Empirical Investigations. Chicago: University of Chicago Press, p. 267-278.
	Readings: Begin Ferris, The Science of Liberty, Ch. 1-2 **Heather Douglass Lecture [discussion]**
January 26-31	**Readings:** Continue reading Ferris, Ch. 3-9
February 2-9	**Science, It's Skeptics and Anti-Scientism**
	Readings: Ferris, Ch. 10-11
February 2 or 7	**Possible Guest Lecture [instructor out of town]**
	Readings: Sztompka, Piotr. 2007. Trust in Science. Journal of Classical Sociology, 7:211-220.
	Readings: Specter, Chapters 1, 2, 5 and 6 **Discussion Forum: Robots, Ethics and Policy [discussion]**
February 14	**Possible Guest Speaker**

February 16-23	**The Threshold of the Information Age/Does Technology "Have" Politics**
	Readings: Chandler and Cortada, eds. A Nation Transformed, The readings are: Ch 5. Margaret Graham. The Threshold of the Information Age: Radio, Television and Motion Pictures Mobilize the Nation. p. 137-176 Ch 6. James W. Cortada. Progenitors of the Information Age: The Development of Chips and Computers. p. 177-216 L. Winner. 1989. The Whale and the Reactor: A Search for Limits in an Age of High Technology. p. 19-39 [entitled: Do Artifacts Have Politics?]. Chicago:University of Chicago Press.
February 28	**NO CLASS - Take-Home Mid-Term Exam Due in my Office (GR 3.214)**
March 1	**Discussion Forum: Politics of Science and Education**
March 6-8	**Computing, New Information Technologies and Ethical Issues**
	Readings: Morris, Robert G. and Higgins, George E. Neutralizing Potential and Self-Reported Digital Piracy: A Multi-Theoretical Exploration among College Undergraduates. Criminal Justice Review. 34:173-195 Foster, Kenneth R. and Jon Jaeger. 2007. RFID Inside: The Murky Ethics of Implanted Chips. Department of Bioengineering, University of Pennsylvania: Departmental Papers (BE).
March 11-17	***** SPRING BREAK *****
March 20-27	**Collective Action and Social Technologies**
	Readings: Shirkey, Ch. 1-2, 6-7 **Discussion Forum: Wiser use of Science, Wiser Wishes and Wiser Policies**
March 29	**Possible Guest Presentation**
April 3-10	**Computing, Genetics, Biotechnology, Nanotechnology & Robotics: Overlapping Revolutions**
	Readings: Kurzweil. Ch. 5, p. 205-298. Roco, M. C., 2003. Broader Societal Issues of Nanotechnology. Journal of Nanoparticle Research. 5:181-189

April 12-17	**The Implications of the Technological Revolution**
	Readings: Kurzweil, Ch. 8, p. 391-426 McKinnon, Barbara. 2006. Ethics: Theory and Contemporary Issues (Ch 17: Stem Cell Research, Cloning and Genetic Engineering pp406-430. Wordsworth. Mehlman, Maxwell J. 2005. Genetic Enhancement: Plan Now to Act Later. Kennedy Institute of Ethics Journal IS: 77-82 **Science – Policy Interactions and Social Value: A Symposium**
April 19-24	**Technological Advance, Ethics and Healthcare**
	Readings: Mykytyn, Courtney Everts. 2006. Anti-Aging Medicine: Predictions, Moral Obligations and Biomedical Intervention. Anthropology Quarterly. 79:5-31 Coors, Marilyn et al. 2010. The Ethics of Using Transgenic Non-Human Primates to Study What Makes Us Human. Nature.com: 658-812 Outbreak Detectives Embrace the Genome Era. 2011. Science. p. 1818-1819.
April 24	**Possible Guest Speaker**
April 26- May 3	**Wrap-Up, Student Research Presentations, Open Discussion**
May 8	**Paper due in office, Green Hall, GR 3.214.**

Center for Values in Medicine, Science and Technology Lectures and Presentations

January 25	Heather Douglass	Science vs. Politics: The Battle for Integrity
February 8	Discussion Forum	Robots, Ethics and Policy
February 29	Discussion Forum	Politics of Science and Education
March 21	Nancy Cartwright	Wiser Use of Science, Wiser Wishes, Wiser Political
April 13-14	Symposium	Science-Policy Interactions and Social Values

Other details: http://go.utdallas.edu/syllabus-policies