

HISTORY 3900 (DSC)
SCIENCE & TECHNOLOGY
IN WORLD HISTORY
Fall Semester 2007

Professor Tim Wolters (twolters@hass.usu.edu; 7-1295)

Class: TuTh, 1:30 - 2:45pm, Business 320

Office hours: MWF, 2:25 – 3:25 pm, Old Main 323F, or by appointment

Undergraduate Teaching Fellow: Lenaye Howard (lenayehoward@cc.usu.edu)

Course Description and Objectives:

This course explores the nature of scientific and technological change. Obviously, there are numerous legitimate ways to explore such a broad and complex topic. This particular class employs an historical approach as the means for exploring the relationships between science, technology, and human values. It seeks to investigate how science and technology have shaped (and are shaped by) economic, political, military, societal, environmental, and cultural life. Although primarily a lecture course, students' questions and comments are encouraged, both in and out of class.

The objectives of this course are: (1) to introduce students to the history of science and technology, (2) to expose students to a wide range of technically-oriented source material, including but not limited to the letters, notebooks, and memoirs of scientists and engineers, as well as related work by scholars who study the history of science, technology, medicine, and the environment, (3) to teach students how to analyze these types of sources, (4) to provide students with a foundation for better understanding of the scientific method, (5) to provide students with a foundation for better understanding the technical world we inhabit, and (6) to help achieve the University's goal of preparing citizen-scholars to serve the people of Utah, the nation, and the world.

The prerequisites for this course are: CIL - Information Resources (II), CIL - Document Processing (IV), and ENGL 2010. For more on USU's Computer & Information Literacy (CIL) requirements, please see <http://cil.usu.edu/cil.htm>. This course is intended primarily for sophomores, juniors and seniors in the colleges of agriculture, business, and humanities, arts, and social sciences.

Required Reading:

Michael Crichton, *Timeline*. New York: Alfred A. Knopf, 1999.

AND EITHER

Leonard N. Rosenband, *Papermaking in Eighteenth-Century France: Management, Labor, and Revolution at the Montgolfier Mill, 1761-1805*. Baltimore: Johns Hopkins University Press, 2000.

OR

David A. Mindell, *War, Technology, and Experience Aboard the USS Monitor*. Baltimore: Johns Hopkins University Press, 2000.

[Both books are available through Bookfinder.com for \$10-\$15 (shipping included)]

Course Reader (Available at the USU Bookstore for \$69.95):

Eting E. Morison, "The Pertinence of the Past in Computing the Future," in *Men, Machines, and Modern Times*. Cambridge, MA: MIT Press, 1966. (ECR)

Lauriston Sharp, "Steel Axes for Stone-Age Australians," in *Human Problems in Technological Change*. New York: Russell Sage Foundation, 1952.

Jared Diamond, "Blueprints and Borrowed Letters," in *Guns, Germs, and Steel: The Fates of Human Societies*. New York, NY: W. W. Norton, 1997. (ECR)

Plutarch, "Marcellus," passages 14-18, in *Makers of Rome*. New York, NY: Penguin Classics, 1965.

Titus Livius (Livy), "Book XXIV," passages 33-39, in *The War with Hannibal*. New York: Penguin Classics, 1965.

Daniel J. Boorstin, "Artificial Stone: A Roman Revolution," in *The Creators: A History of Heroes of the Imagination*. New York: Random House, 1992.

James E. McClellan and Harold Dorn, "The Enduring East," in *Science and Technology in World History*. Baltimore, MD: Johns Hopkins University Press, 1999.

Joseph Needham, "Magnetic Directivity and Polarity," sections ii, iii, and iv, in *Science and Civilisation in China*. Vol. 4, part 1. Cambridge, UK: Cambridge University Press, 1962.

Francesca Bray, "Textile Production," in *Technology and Society in Ming China (1368-1644)*. N.p.: SHOT and AHA, 2000.

Lynn White, Jr., "Stirrup, Mounted Shock Combat, Feudalism, and Chivalry," in *Medieval Technology and Social Change*. London: Oxford University Press, 1962.

Daniel J. Boorstin, "'God Said, Let Newton Be'," in *The Discoverers: A History of Man's Search to Know His World and Himself*. New York: Random House, 1983.

Carlo M. Cipolla, "The European Scene," in *Guns, Sails, and Empires: Technological Innovation and the Early Phases of European Expansion, 1400-1700*. Manhattan, KS: Sunflower University Press, 1965.

Daniel Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century*. New York: Oxford University Press, 1981.

Arnold Pacey, "Three Industrial Movements, 1700-1815," in *Technology in World Civilization*. Cambridge, MA: MIT Press, 1990.

Edmund Newell, "Atmospheric Pollution and the British Copper Industry, 1690-1920," *Technology and Culture* 38 (July 1997): 655-689 [Downloadable through JSTOR at <http://www.jstor.org/view/0040165x/sp030160/03x6327i/0?frame=noframe&userID=817b43f3@usu.edu/01cc993314102c411413753ee1&dpi=3&config=jstor>].

Thomas Parke Hughes, "Edison the Hedgehog: Invention and Development," in *Networks of Power: Electrification in Western Society, 1880-1930*. Baltimore: Johns Hopkins University Press, 1983.

Ruth Schwartz Cowan, "The Invention of Housework: The Early Stages of Industrialization," in *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave*. New York: Basic Books, 1984.

Rosalind Williams, "Living in a Technological World," in *Retooling: A Historian Confronts Technological Change*. Cambridge, MA: MIT Press, 2002.

William McNeill, "World Wars of the Twentieth Century," in *The Pursuit of Power: Technology, Armed Force, and Society since A.D. 1000*. Chicago: University of Chicago Press, 1982.

Curtis Peebles, "The Angel of Paradise Ranch: The U-2 Aquatone," in *Dark Eagles: A History of Top Secret U.S. Aircraft*. New York: Ballantine Books, 1999.

Required readings are not optional. If you desire to take a course in which you can "get-by" on lecture notes, this is not the class for you. Those who fail to do required readings by the assigned due-date will have great difficulty achieving a passing grade.

As a Depth Science (DSC), the readings for this class are fairly technical. You will find it takes longer to read 30 pages out of the course reader than it does to read 30 pages of the latest novel by Danielle Steel or Tom Clancy. **Budget your time accordingly.**

Requirements and Grading:

Three Quizzes (lowest dropped) – 10% (i.e., each quiz counts 5%)

Term Paper – 30%

Final Exam – 25%

Mid-Term Exam – 25%

Class Participation – 10%

Random quizzes are given throughout the semester and are based on assigned readings and class lectures. Quizzes cannot be made-up unless you miss class due to an official, university-excused absence; however, the lowest quiz score will be dropped. If you read carefully and study your notes thoroughly, you should score well on these quizzes.

The paper assignment will be given in on September 18th and will be due on November 20th. Extensions will be granted only for extenuating circumstances. ***In no instance will an extension be granted unless it is requested by the start of class on November 13th.*** Delinquent papers receive a one-letter grade reduction for every class period they are late.

The mid-term and final exams will consist of multiple choice, short answer, and/or essay questions. Both are based on class lectures and required readings.

Numeric scores may be converted to letter grades according to the following scale: 97-100 = A+, 93-96 = A, 90-92 = A-, 87-89 = B+, 83-86 = B, 80-82 = B-, 77-79 = C+, 73-76 = C, 70-72 = C-, 67-69 = D+, 63-66 = D, 60-62 = D-, and <60 = F. In calculating a final grade for the course, letter grades will be converted to the highest number on this scale. For example, an “A+” paper will receive 100 points, an “A” paper 96 points, an “A-” paper 92 points, a “B+” paper 89 points, and so on down to an “F” paper, which will receive only 50 points. Failure to take a quiz/test or to turn in a paper will result a score of zero points.

Miscellaneous:

Any cheating, falsification, or presentation of another’s work as your own without proper credit being given (i.e., plagiarism) is a violation of Section V-3 of “The Code of Policies and Procedures for Students at Utah State University” and will lead to one or more of the sanctions described in Section VI-1 of the code. If you are unclear about what constitutes plagiarism, see me BEFORE turning in a given assignment.

University policy states that a student may receive an “I” only for extenuating circumstances, such as serious illness or a death in the family. An incomplete cannot be used to avoid a poor grade or to retain financial aid.

If accommodations for the course are needed, students should contact the Disability Resource Center, located in the University Inn, Room 101 (7-2444). The Center can provide a copy of this syllabus in a suitable alternate format.

Class Schedule:

	<u>Topic</u>	<u>Due (@ <i>Start</i> of Class)</u>
TUE, AUG 28:	Introduction	
THU, AUG 30:	Science vs. Technology	Morison, 67-87
TUE, SEP 4:	Stone Tools	Sharp, 69-81
THU, SEP 6:	Agriculture Revolution and Rise of Cities	Diamond, 215-238
TUE, SEP 11:	Greek Science	Plutarch & Livy
THU, SEP 13:	Roman Technology	Boorstin, 107-118
TUE, SEP 18:	How to Write a Term Paper	<i>Term Paper Assignment</i>
THU, SEP 20:	No Class – Naval Academy Conference	
TUE, SEP 25:	Islam and Byzantium	McClellan/Dorn, 99-115
THU, SEP 27:	China: Song and Yuan Dynasties	Needham, 249-261
TUE, OCT 2:	China: Ming Dynasty	Bray, 43-53
THU, OCT 4:	Medieval Europe	White, 1-38
TUE, OCT 9:	Renaissance Science	Boorstin, 401-408
THU, OCT 11:	Renaissance Technology	<i>Crichton Due</i>
TUE, OCT 16:	Mid-Term Exam	
THU, OCT 18:	No Class – SHOT Conference	
TUE, OCT 23:	Imperialism: The New World	Cipolla, 21-89
THU, OCT 25:	Imperialism: Colonizing Africa	Headrick, 58-79
TUE, OCT 30:	The Industrial Revolution: Machines	Pacey, 108-130
THU, NOV 1:	The Industrial Revolution: People	<i>Rosenband or Mindell Due</i>
TUE, NOV 6:	Mechanization of Agriculture	Student Selections
THU, NOV 8:	Industrialization and the Environment	Newell, 655-689
TUE, NOV 13:	Electrification	Hughes, 18-46
THU, NOV 15:	Industrialization of Housework	Cowan, 40-68

TUE, NOV 20:	Term Papers Due	Submit via e-mail
THU, NOV 22:	No Class - Thanksgiving	
TUE, NOV 27	Engineering Professionalization	Williams, 1-28
THU, NOV 29	Science, Technology, and Modern War: I	McNeill, 307-361
TUE, DEC 4	Science, Technology, and Modern War: II	Peebles, 18-46
THU, DEC 6	Science & Technology in the 21st Century	No Assigned Reading
TUE, DEC 11:	Final Exam	11:30 - 1:20pm NOTE: The Final Exam is 2 hours earlier than when the class regularly meets!