History 3350 **History and Philosophy of Science** Spring 2011

Instructor: Dr. Eric Swedin
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Office Hours: 12:30-5:30 on Thursdays at Davis.
Other office hours are available by appointment.

Texts: James E. McClellan and Harold Dorn, *Science and Technology in World History: An Introduction* (2nd edition; Johns Hopkins University Press, 2006) ISBN: 978-0-8018-8360-6

Timothy Ferris, *The Science of Liberty: Democracy, Reason, and the Laws of Nature* (Harper, 2010) ISBN: 0060781505

Class Description:
The evolution and practice of Western science from origins to contemporary ideas. The goal of this course is to encourage the student to think about science from an historical perspective, and to appreciate how science can inform the study of history.

Class participation and discussion is expected.

Grading Policies:
Grades will be determined on the following basis:

Quizzes	60%
Time-line assignment	20%
Book Report Presentation	20%

Grades: A: 90 - 100% B: 80 - 89% C: 70 - 79% D: 60 - 69% E: 0 - 59%
(Grades at the high or low ends of these ranges will earn plus and minus grades.)

Quizzes: There will a quiz every day at the beginning of class. Each quiz will be based on the readings that you were given for that day, or will be given on the content of the previous class's presentations. You may miss ONE quiz; if you take the extra quiz, it will count as extra credit.

Students with Disabilities:
Any student requiring accommodations or services due to a disability must contact Services for Students with Disabilities (SSD) in Room 181 of the Student Service Center. SSD can also arrange to provide materials (including this syllabus) in alternative formats if necessary.

Timeline Exercise:
Objective: Review of key events of the history of science; gain an increased understanding of historical perspective.

Make a timeline of what you see as the 30 most important events in the history of science from prehistory to the present. Use our textbooks or an encyclopedia or the Internet to find your information. For each entry, include a 2-3 sentence justification for your choice. Timeline MUST be typed.
Grading will be based on three criteria:

1) Completion of 30 world history events and 2-3 sentence descriptions.
2) Neatness and presentation.
3) Grammatical or mechanical errors.

Cheating Policy: Cheating and deceit are not accepted at Weber State University. *Cheating on an quiz or assignment, or turning in someone else's work as your own, will result in an E for the class*. You may work together on your assignments and papers, but you must turn in your own work. If you quote from a book, article, or web site, you must properly quote and cite your work. **Avoid even the appearance of cheating or plagiarism.**

Cell Phones, Texting, and Laptops:
Put your cell phones on vibrate. Try to avoid leaving class to take a call, but an occasional emergency is understandable. There will be NO texting in this class. Laptops or other personal digital tools may be used to take notes or look up material relevant to class discussions. No other uses of laptops will be tolerated.

Campus Closure:
In the event of an extended campus closure, please look at your Weber State email in order for instructions on how we will continue the class via email and the Blackboard online course system.

Book Report:
Each student must select a book that falls into one of the following categories:

- the history of science
- the history of medicine
- history of technology
- the philosophy of science (including ethical issues)
- the philosophy of medicine (including ethical issues)

Attached is a list of suggested books. Other books may be used by the student, subject to approval by the instructor. On an assigned date, the student will give a ten minute in-class presentation on their book. No book report will go beyond fifteen minutes. Describe the content of the book and explain how it fits within the history and philosophy of science. The purpose of this exercise is to introduce the class to the variety of literature available on the history and philosophy of science.

Book Report Suggestions:
These are suggestions on how to prepare your book report.
- Look up some reviews of the book, as well as reading it, since the reviews can help you place the book in a larger context.
- Ask yourself these questions and answer them during the presentation:
    Who is the author and why are they qualified to write this book?
    What is the book about and when was it published?
    Why was this book written?
    Summerize the story being told or the arguments being made in the book.
    What is the main point the author is trying to make?
    What perspective is the author trying to represent in writing this text?

Scoring rubric:
Read book: Gave a clear description of text in its entirety. (40 points)
Synthesis: Understood bigger picture of text, connected small tidbits together and within larger themes. (20 points)
Presentation: Your manner was clear, organized, and prepared. Could answer questions. (35 points)
Personal insight: Made personal connections to book, could see implications of text. (5 points)

Schedule:

Week	Monday
January 3	Introduction to class; What is Science; Everyday Distances and Astronomical Distances (no readings)
January 10	Readings: McClellan and Dorn, Introduction, Chapters 1-3
January 17	Holiday
January 24	Readings: McClellan and Dorn, Chapters 4-6
January 31	Readings: McClellan and Dorn, Chapters 7-9
February 7	Readings: McClellan and Dorn, Chapters 10-12
February 14	Readings: McClellan and Dorn, Chapters 13-15 Students 1-3 presentations
February 21	Holiday
February 28	Readings: McClellan and Dorn, Chapter 16 Students 4-6 presentations
March 7	Readings: McClellan and Dorn, Chapter 17 Readings: Ferris, Chapters 1-2 Students 7-9 presentations
March 14	Spring break
March 21	Readings: McClellan and Dorn, Chapter 18 Readings: Ferris, Chapters 3-4 Students 10-12 presentations
March 28	Guest Lecture (no readings) Students 13-15 presentations **Timeline assignment due**
April 4	Readings: McClellan and Dorn, Chapter 19 Readings: Ferris, Chapters 5-6 Students 16-18 presentations
April 11	Readings: McClellan and Dorn, Chapter 20 and Conclusion Readings: Ferris, Chapters 7-9 Students 19-22 presentations
April 18	Readings: Ferris, Chapters 10-12 Students 23-26 presentations
	NO Final Exam

Some Suggested Books for Class Presentation

Hal Hellman, *Great Feuds in Science: Ten of the Liveliest Disputes Ever* (1998).

David Bodanis, *E=mc2: A Biography of the World's Most Famous Equation* (2000).

Daniel J. Kevles and Leroy Hood, eds., *The Code of Codes: Scientific and Social Issues in the Human Genome Project* (Cambridge, Mass.: Harvard University Press, 1992).

Stephen W. Hawking, *A Brief History of Time: From the Big Bang to Black Holes* (Toronto; New York: Bantam Books, 1988).

Richard S. Westfall, *The Life of Isaac Newton* (Cambridge [England]; New York: Cambridge University Press, 1993).

Martin J. S. Rudwick, *Scenes from Deep Time: Early Pictorial Representations of the Prehistoric World* (Chicago: University of Chicago Press, 1992).

Thomas S. Kuhn, *The Structure of Scientific Revolutions* (second edition, Chicago: University of Chicago Press, 1962, 1970).

Margaret C. Jacob, *Scientific Culture and the Making of the Industrial West* (New York: Oxford University Press, 1997).

John Horgan, *The End of Science: Facing the Limits of Knowledge in the Twilight of the Scientific Age* (Reading, Mass. : Addison-Wesley Pub., 1996).

John G. Simmons, *The Scientific 100: A Ranking of the Most Influential Scientists, Past and Present* (Secaucus, N.J.: Carol Pub. Group, 1996).

Sandra G. Harding, *Is Science Multicultural?: Postcolonialisms, Feminisms, and Epistemologies* (Bloomington: Indiana University Press, 1998).

Steven Shapin, *The Scientific Revolution* (Chicago: University of Chicago Press, 1996).

Roy Porter, ed., *The Cambridge Illustrated History of Medicine* (Cambridge; New York: Cambridge University Press, 1996).

Roy Porter, *A Social History of Madness: The World Through the Eyes of the Insane* (New York: Weidenfeld & Nicolson, 1987).

H. E. LeGrand, *Drifting Continents and Shifting Theories: The Modern Revolution in Geology and Scientific Change* (New York: Cambridge University Press, 1988).

Richard Leakey and Roger Lewin, *Origins Reconsidered: In Search of What Makes Us Human* (New York: Doubleday, 1992).

Jared M. Diamond, *The Third Chimpanzee: The Evolution and Future of the Human Animal* (New York: HarperCollins, 1992).

Jared M. Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (W. W. Norton, 1997).

Jared M. Diamond, *Collapse: How Societies Choose to Fail or Succeed* (Penguin, 2005).

Cathy Cobb and Harold Goldwhite, *Creations of Fire: Chemistry's Lively History from Alchemy to the Atomic Age* (New York: Plenum Press, 1995).

Peter J. Bowler, *Evolution: The History of an Idea* (Berkeley: University of California Press, 1984).

Richard Rhodes, *The Making of the Atomic Bomb* (New York: Simon & Schuster, 1986).

Richard Rhodes, *Dark Sun: The Making of the Hydrogen Bomb* (New York: Simon and Schuster, 1996).

Richard Rhodes, *Deadly Feasts: Tracking the Secrets of a Terrifying New Plague* (New York: Simon & Schuster, 1997).

Paul R. Gross, Norman Levitt, and Martin W. Lewis, eds. *The Flight from Science and Reason* (New York: New York Academy of Sciences, 1997).

Stephen Jay Gould, *The Mismeasure of Man* (1981, Revised and expanded: 1996).

Stephen Jay Gould, *Time's Arrow, Time's Cycle: Myth and Metaphor in the Discovery of Geological Time* (1996).

Peter D. Kramer, *Listening to Prozac: A Psychiatrist Explores Antidepressant Drugs and the Remaking of the Self* (1993).

Ronald L. Numbers, *The Creationists* (1992).

Ronald L. Numbers and Darrel W. Amundsen, editors, *Caring and Curing: Health and Medicine in the Western Religious Traditions* (1986).

Charles E. Rosenberg, *Explaining Epidemics and Other Studies in the History of Medicine* (1992).

Charles E. Rosenberg, *No Other Gods: On Science and American Social Thought* (1976).

Gerald N. Grob, *The Mad Among Us: A History of the Care of America's Mentally Ill* (1994).

Morris J. Vogel and Charles E. Rosenberg, *The Therapeutic Revolution: Essays in the Social History of American Medicine* (Philadelphia: University of Pennsylvania Press, 1979).

Maitland A. Edey and Donald C. Johanson, *Blueprints: Solving the Mystery of Evolution* (1990)

Timothy Ferris, *Coming of Age in the Milky Way* (1989)

Timothy Ferris, *The Whole Shebang: a State of the Universe Report* (1998)

David C. Lindberg, *The Beginnings of Western Science: The European Scientific Tradition in Philosophical, Religious, and Institutional Context, Prehistory to A.D. 1450* (Second edition, 2008)

Bill Bryson, *A Short History of Nearly Everything* (2003)

Chet Raymo, *Walking Zero: Discovering Cosmic Space and Time Along the Prime Meridian* (2006)

Alfred W. Crosby, *Children of the Sun: A History of Humanity's Unappeasable Appetite for Energy* (2006)

Douglas Mulhall, *Our Molecular Future: How Nanotechnology, Robotics, Genetics and Artificial Intelligence Will Transform Our World* (2002)

David M. Friedman, *The Immortalists: Charles Lindbergh, Dr. Alexis Carrel, and Their Daring Quest to Live Forever* (2007)

Michael Shellenberger and Ted Nordhaus, *Break Through: From the Death of Environmentalism to the Politics of Possibility* (2007).

Marcia Bartusiak, *The Day We Found the Universe* (Panthean, 2009).

W. Brian Arthur, *The Nature of Technology: What It Is and How It Evolves* (Free Press, 2009)

Dan Agin, *Junk Science: How Politicians, Corporations, and Other Hucksters Betray Us* (Thomas Dunne, 2006)

John Gribbin, *The Scientists: A History of Science Told Through the Lives of Its Greatest Inventors* (Random House, 2004)

Bill Bryson, *A Short History of Nearly Everything* (New York : Broadway Books, 2003)

Carl Zimmer, *Evolution: The Triumph of an Idea* (HarperCollins, 2001)

Edward J. Larson, *Evolution: The Remarkable History of a Scientific Theory* (Modern Library, 2004)

Brian Payton, *The Ice Passage: A True Story of Ambition, Disaster, and Endurance in the Arctic Wilderness* (2010)

David Fisher, *Much Ado about (Practically) Nothing: A History of the Noble Gases* (2010)

Victor K. McElheny, *Drawing the Map of Life: Inside the Human Genome Project* (2010)

Rosemary Drisdelle, *Parasites: Tales of Humanity's Most Unwelcome Guests* (2010)

Richard Conniff, *Swimming with Piranhas at Feeding Time: My Life Doing Dumb Stuff with Animals* (2010)

Sam Kean, *The Disappearing Spoon: And Other True Tales of Madness, Love, and the History of the World from the Periodic Table of the Elements* (2010)

Anthony Aveni, *Stairways to the Stars: Skywatching in Three Great Ancient Cultures* (1999)

Neil Shubin, *Your Inner Fish: A Journey into the 3.5-Billion-Year History of the Human Body* (Pantheon, 2008)

Daniel Lord Smail, *On Deep History and the Brain* (University of California Press, 2007)

Ronald L. Numbers, editor, *Galileo Goes to Jail and Other Myths About Science and Religion* (Harvard University Press, 2009).

Any books by Carl Sagan, Stephen Jay Gould, or Edward O. Wilson.

Selected science fiction novels.