

INTEGRATED LIBERAL STUDIES / HISTORY OF SCIENCE 201

Western culture: Science, technology, and philosophy I

Fall 2006

Lectures: 1:00PM - 2:15PM TuTh

6210 Social Science

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COURSE DESCRIPTION

This course is the first part in a three-term sequence that examines the development of science in cultural and intellectual context from antiquity to the twentieth century. The course begins with an examination of perspectives towards the natural world in the poetry, philosophy, and medicine of ancient Greece, and follows the movement of the classical tradition into medieval Islam and Christendom. The final part of the course focuses on the transformation of European science during the 16th and 17th centuries. Throughout our investigation of what 'science' has been in the past, we'll pay particular attention to issues which still have relevance today, such as the interaction between science and religion, the importance of different institutional settings for science, and the relationship between science and government.

This class emphasizes the skills of analyzing historical documents and of constructing persuasive arguments in answer to historical questions. It is therefore extremely important that you complete the readings assigned for each class session before coming to class. Please bring the Course Reader with you to all lectures and discussion sections.

COURSE REQUIREMENTS AND GRADING

1. Attend lectures and discussion sections.
2. Prepare readings.
3. Grades will be based on class participation in discussion sections, (nearly) weekly quizzes or other exercises in discussion sections, and 3 essay-type exams. Grades will be calculated using the following rough guidelines:

class participation	~10%
quizzes (in discussion sections)	~20%
exam 1 (in class, Thursday, October 12)	~20%
exam 2 (in class, Thursday, November 16)	~20%
exam 3 (due Friday, Dec. 22, by 12:00PM)	~30%

Honors students need to complete an honors assignment. Please see me for details.

COURSE POLICIES

I will make every effort to honor requests for reasonable accommodations made by individuals with disabilities. If you think you qualify for accommodation, please contact the McBurney Disability Resource Center at 263-2741 <<http://jumpgate.acadsvcs.wisc.edu/~mcburney/>> to establish your eligibility for services. If you require such accommodation, please let me know as soon as possible in the semester. All requests are confidential.

If you need to reschedule an exam due to a religious observance, please let me know within the first two weeks of class. If you must miss an exam in the course of the semester due to other unavoidable circumstances (such as a university-approved athletic trip, medical problem or family emergency) you should notify me, preferably in advance, so that we can make arrangements for you to take a makeup exam within a week of the originally scheduled date. If you miss an exam and do not contact me about a makeup exam by the following day, you will not be able to take a makeup exam.

Academic honesty is expected of students at the University of Wisconsin-Madison in compliance with the student code of conduct. All written work that you turn in under your name should be solely your work. Both paper and internet sources must be acknowledged; failure to understand what counts as plagiarism is not an adequate excuse. Plagiarism and other forms of academic misconduct carry penalties. Please feel free to talk to me or to your TA if you have any questions about how to properly cite sources in your written work.

TEXTBOOKS

CR = Course Reader; purchase at the History of Science dept. office, 7143 Social Science – *all sales final!*
L = David C. Lindberg, *The beginnings of Western science* (1992); purchase at the University Book Store.
D = Peter Dear, *Revolutionizing the sciences* (2001); purchase at the University Book Store, 711 State Street.

All textbooks may be consulted on reserve at the College Library, Helen C. White Hall.

SCHEDULE OF READINGS AND ASSIGNMENTS

Sept. 5	introduction / Homeric and Milesian world views CR, 1-8 L, 1-4, 21-29	Homer, <u>The Odyssey</u> , selections; Milesians
Sept. 7	Greek medicine CR, 9-18 L, 111-19	healing cults; 'The sacred disease'
Sept. 12	Greek natural philosophy CR, 19-22 L, 29-35	Eleatics, pluralists, and atomists
Sept. 14	Plato CR, 23-30 L, 35-45	Plato, <u>Republic</u> and <u>Timaeus</u> , selections
Sept. 19	Aristotle (I) CR, 31-34 L, 47-54	Aristotle, <u>Physics</u> , book II, chaps. 3, 7-8
Sept. 21	Aristotle (II) CR, 31-34 L, 54-68	Aristotle, <u>Physics</u> , book II, chaps. 3, 7-8
Sept. 26	the Greek cosmological tradition CR, 35-40 L, 41-43, 89-92	diagrams; Ptolemy, <u>Almagest</u> , bk. I, chaps. 2-4
Sept. 28	the Greek astronomical tradition CR, 37, 41-45 L, 92-105	Ptolemy, <u>Almagest</u> , bk. I, chap. 7 Eudoxus' + Ptolemy's planetary models NB: diagrams in CR, 43-45 = L, 100-104
Oct. 3	Hellenistic natural philosophy CR, 47-55 L, 69-83, 133-49	Pliny the Elder, <u>Natural history</u> , selections
Oct. 5	the rise of the medieval university CR, 56-57 L, 151-59, 183-203, 206-213	Abelard, Anselm, and Bernard of Clairvaux

- Oct. 10 **film: 'The Matrix' (1999)**
 Oct. 12 **EXAM 1** (in class)
- Oct. 17 **Greek learning in the Middle Ages (I)**
 CR, 58-60 reaction to Aristotle, documents #10-12
 L, 161-70, 203-206
- Oct. 19 **Greek learning in the Middle Ages (II)**
 CR, 60-66 reaction to Aristotle, document #13; illustration
 L, 215-52
- Oct. 24 **scientific renaissance: medicine**
 CR, 67-92 Vesalius, On the fabric of the human body (1543), selections
 D, 8-9, 30-33, 37-41 [introduction, section III + chap. 2, sections I + III]
- Oct. 26 **scientific renaissance: astronomy**
 CR, 93 Peurbach, New theoric of the planets (1475), illustration
 D, 15-24, 33-37 [chap. 1, sections II-III + chap. 2, section II]
 L, 261-67
- Oct. 31 **heliocentrism**
 CR, 95-107 Copernicus, On the revolutions (1543), selections; diagrams
 D, 33-37 [chap. 2, section II]
- Nov. 2 **responses to heliocentrism**
 CR, 95-96, 109 Copernicus, On the revolutions (1543), selections
 ['To the reader concerning the hypotheses of this work']
 Tycho Brahe, On the most recent phenomena (1588), selection
 D, 41-45 [chap. 2, section IV]
- Nov. 7 **heliocentrism**
 CR, 111-125 Kepler illustrations;
 Galileo, Sidereal messenger (1610), selections
 D, 65-78, 101-8 [chap. 4, sections I-III + chap. 6, sections I-II]
- Nov. 9 **the Galileo affair**
 CR, 127-140 Galileo documents
- Nov. 14 **the skeptical crisis**
 CR, 157-175 Of two woonderful Popish monsters (1586), selections;
 Paré, On monsters and prodigies (1573), selections;
 Descartes, Discourse on the method (1637), part 1
 D, 80-84 [chap. 5, section I]
- Nov. 16 **EXAM 2** (in class)
- Nov. 21 **the scientific community**
 CR, 141-156 Philosophical transactions exercise (no class meeting)
Philosophical transactions 1 (1665): 1-16
- Nov. 23 THANKSGIVING
- Nov. 28 **Baconian reform**
 CR, 177-209 Bacon, Great instauration (1620), 'Preparative,' selections
 Galileo, Dialogue (1632), selections;
 Boyle, "New experiments," Philtrans 3 (1668): 581-600
 D, 57-64, 131-45 [chap. 3, sections III-IV; chap. 7, sections I-III]
- Nov. 30 **mechanical philosophies**
 CR, 211-212 Descartes, Principles of philosophy (1644/1647), selections
 D, 84-86 [chap. 5, section II]

Dec. 5	Cartesianism CR, 213-218 D, 86-100	Descartes, <u>The world</u> (1633/1677), chaps. 5-7 [chap. 5, sections III-VI]
Dec. 7	Newtonianism CR, 219-224 D, 149-67	Newton, <u>The mathematical principles of natural philosophy</u> (1687/1729), selections; Newton, 'The system of the world' (1685), selections Newton, 'Query 31,' <u>Opticks</u> (1706/1717), selections [chap. 8, sections I- III]
Dec. 12	scientific societies CR, 225-240 D, 111-23	Bacon, <u>New Atlantis</u> (1627), selections Royal Society + Academy of Sciences illustrations [chap. 6, section IV]
Dec. 14	science and society CR, 241-252 D, 123-30, 168-70	Swift, <u>Gulliver's travels</u> (1735), selections [chap. 6, section V + conclusion]
Dec. 22	EXAM 3 (finals week): due Friday, Dec. 22, by 12:00PM noon	