

INTEGRATED LIBERAL STUDIES / HISTORY OF SCIENCE 201
Western culture: Science, technology, and philosophy I

Fall 2011

Lectures: 1:00PM - 2:15PM TTh
B102 Van Vleck Hall

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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This class emphasizes the skills of analyzing historical documents and of constructing persuasive arguments in answer to historical questions.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 exams. Grades will be calculated using the following rough guidelines:

class participation in discussion sections	~10%
quizzes/exercises in discussion sections	~20%
exam 1 (in class, Thursday, October 6)	~20%
exam 2 (in class, Thursday, November 10)	~20%
exam 3 (due Tuesday, December 20, by 5:00PM)	~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 equal access accommodations made by persons with disabilities. If you think you qualify for accommodation, please contact the McBurney Disability Resource Center at 263-2741 <<http://www.mcburney.wisc.edu/>> to establish your eligibility for services. If you need 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, 210 Bradley Memorial – all sales final!
L = David C. Lindberg, *The beginnings of Western science* (2007); 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. 6 (Tu)	course introduction; Homeric and Milesian world views Course Reader (CR), 1-7 Homer, <i>The Odyssey</i> , selections; Milesians Lindberg (L), 1-3, 21-29
Sept. 8 (Th)	Greek medicine CR, 9-18 healing cults; 'The sacred disease' L, 111-19
Sept. 13	Greek natural philosophy CR, 19-22 Eleatics, pluralists, and atomists L, 29-34
Sept. 15	Plato CR, 23-30 Plato, <i>Republic</i> and <i>Timaeus</i> , selections L, 34-44
Sept. 20	Aristotle I CR, 31-34 Aristotle, <i>Physics</i> , bk. II, chaps. 3, 7-8 L, 45-52
Sept. 22	Aristotle II CR, 31-34 Aristotle, <i>Physics</i> , bk. II, chaps. 3, 7-8 L, 52-66
Sept. 27	the Greek cosmological tradition CR, 35-40 diagrams; Ptolemy, <i>Almagest</i> , bk. I, chaps. 2-4 L, 41-43, 86-87
Sept. 29	the Greek astronomical tradition CR, 36-37, 41-45 Ptolemy, <i>Almagest</i> , bk. I, chap. 7 Eudoxus' + Ptolemy's planetary models L, 88-105 NB: diagrams in CR, 43-45 = L, 100-104
Oct. 4	film: 'The Matrix' (1999)
Oct. 6 (Th)	EXAM 1 (in class)

- Oct. 11 **Hellenistic natural philosophy**
 CR, 47-55 Pliny the Elder, *Natural history*, selections
 L, 67-81, 132-48
- Oct. 13 **the rise of the medieval university**
 CR, 57-58 Abelard, Anselm, and Bernard of Clairvaux
 L, 148-62, 193-215, 218-24
- Oct. 18 **Greek learning in the Middle Ages**
 CR, 59-66 reaction to Aristotle, documents #10-13; illustration
 L, 225-60
- Oct. 20 **scientific renaissance: medicine**
 CR, 67-92 Vesalius, *On the fabric of the human body* (1543), selections
 Dear (D), 8-9, 30-33, 37-41 [introduction, section III + chap. 2, sections I + III]
- Oct. 25 **scientific renaissance: astronomy**
 CR, 93 Peurbach, *New theoricis of the planets* (1475), illustration
 D, 15-24, 33-37 [chap. 1, sections II-III + chap. 2, section II]
 L, 261-70
- Oct. 27 **heliocentrism**
 CR, 95-107 Copernicus, *On the revolutions* (1543), selections; diagrams
 D, 33-37 [chap. 2, section II]
- Nov. 1 **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
 [chap. 2, section IV]
 D, 41-45
- Nov. 3 **heliocentrism**
 CR, 111-25, 127 Kepler illustrations;
 Galileo, *Sidereal messenger* (1610), selections; diagrams
 D, 65-78, 101-8 [chap. 4, sections I-III + chap. 6, sections I-II]
- Nov. 8 **the Galileo affair**
 CR, 128-40 Galileo documents
- Nov. 10 (Th)** **EXAM 2** (in class)
- Nov. 15 **the skeptical crisis**
 CR, 141-59 *Of two wonderful Popish monsters* (1586), selections;
 Paré, *On monsters and prodigies* (1573), selections;
 Descartes, *Discourse on the method* (1637), part 1
 [chap. 5, section I]
 D, 80-84
- Nov. 17 **Baconian reform**
 CR, 161-71 Bacon, *Great instauration* (1620), 'Preparative,' selections
 D, 57-64 [ch. 3, sections III-IV]
- Nov. 22 **the scientific community**
 Philosophical transactions exercise (no class meeting)
 CR, 197-214 *Philosophical transactions* 1 (1665): 1-16
- Nov. 24 (Th) THANKSGIVING

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| Nov. 29 | experimentation | Galileo, <i>Dialogue on the chief two world systems</i> (1632), selections |
| | CR, 173-93 | Boyle, "New experiments," <i>Philtrans</i> 3 (1668): 581-600 |
| | D, 131-45 | [ch. 7, sections I-III] |
| Dec. 1 | mechanical philosophies | Descartes, <i>Principles of philosophy</i> (1644/1647), selections |
| | CR, 195-96 | [chap. 5, section II] |
| | D, 84-86 | |
| Dec. 6 | Cartesianism | Descartes, <i>The world</i> (1633/1677), chaps. 5-7 |
| | CR, 215-20 | [chap. 5, sections III-VI] |
| | D, 86-100 | |
| Dec. 8 | Newtonianism | Newton, <i>The mathematical principles of natural philosophy</i> |
| | CR, 221-26 | (1687/1729), selections; |
| | | Newton, 'The system of the world' (1685), selections |
| | | Newton, 'Query 31,' <i>Opticks</i> (1706/1717), selections |
| | D, 149-67 | [chap. 8, sections I- III] |
| Dec. 13 | scientific societies | Bacon, <i>New Atlantis</i> (1627), selections |
| | CR, 227-42 | Royal Society + Academy of Sciences illustrations |
| | D, 111-23 | [chap. 6, section IV] |
| Dec. 15 (Th) | science and society | Swift, <i>Gulliver's travels</i> (1735), selections |
| | CR, 243-54 | [chap. 6, section V + conclusion] |
| | D, 123-30, 168-70 | |
| Dec. 20 (T) | EXAM 3 due Tuesday, December 20, by 5:00PM | |