

INTEGRATED LIBERAL STUDIES 201
Western culture: Science, technology, and philosophy I
Spring 2002
Lectures:1:00-2:15 TR
168 Noland

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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This class emphasizes the skills of analyzing historical documents and of constructing persuasive arguments in answer to historical questions.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 try to complete the readings assigned for each class session before coming to class. Please bring the readings – especially those in the Course Reader – to class with you.

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 in discussion sections, and 3 essay exams (2 in class, 1 during finals week). Grades will be calculated using the following rough guidelines:

class participation	~10%
quizzes (in discussion sections)	~20%
exam 1 (Tuesday, February 26)	~20%
exam 2 (Tuesday, April 9)	~20%
exam 3 (Wednesday, May 15, 2:25PM)	~30%

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

TEXTBOOKS

Course Reader (available for purchase at ASM StudentPrint, B-114 Memorial Union)
David C. **Lindberg**, The beginnings of Western science, Chicago: University of Chicago Press, 1992
(available for purchase at the University Book Store, 711 State Street)
Peter **Dear**, Revolutionizing the sciences, Princeton: Princeton University Press, 2001
(available for purchase at the University Book Store, 711 State Street)

All textbooks are also on reserve at the College Library, Helen C. White Hall.

SCHEDULE OF ASSIGNMENTS AND TOPICS

CR = Course Reader

L = Lindberg, The beginnings of Western science (1992)

D = Dear, Revolutionizing the sciences (2001)

Jan. 22	introduction	
Jan. 24	Homeric and Milesian world views	
	CR, pp. 1-7	[map and timeline; Homer, <u>The Odyssey</u> , selections; Milesians]
	L, pp. 1-4, 21-29	
Jan. 29	Greek medicine	
	CR, pp. 8-17	[healing cults; 'The sacred disease']
	L, pp. 111-119	
Jan. 31	Greek philosophy	
	CR, pp. 18-21	[Eleatics, pluralists, and atomists]
	L, pp. 29-35	
Feb. 5	Plato	
	CR, pp. 22-29	[Plato, <u>Republic</u> and <u>Timaeus</u> , selections]
	L, pp. 35-45	
Feb. 7	Aristotle's natural philosophy	
	CR, pp. 30-33	[Aristotle, <u>Physics</u> , book II, selections]
	L, pp. 47-54	
Feb. 12	Aristotle's cosmos	
	CR, pp. 30-33	[Aristotle, <u>Physics</u> , book II, selections]
	L, pp. 54-68	
Feb. 14	the Greek cosmological tradition	
	CR, pp. 34-39	[the celestial motions; Ptolemy, <u>Almagest</u> , bk. I, selections]
	L, pp. 41-43, 89-92	
Feb. 19	the Greek astronomical tradition	
	CR, pp. 36, 40-44	[Ptolemy, <u>Almagest</u> , bk. I, ch. 7; Eudoxus' and Ptolemy's planetary models]
	L, pp. 92-105	[NB: diagrams in CR, pp. 42-44 = diagrams in L, pp. 100-104]
Feb. 21	from Greek to Roman science	
	CR, pp. 45-53	[Pliny the Elder, <u>Natural history</u> , selections]
	L, pp. 69-83, 120-131 (skim), 133-49	
Feb. 26	EXAM (in class)	
Feb. 28	the rise of the medieval university	
	CR, pp. 54-55	[Abelard, Anselm and Bernard of Clairvaux]
	L, pp. 151-59, 183-203, 206-213	
March 5	the medieval reception of Greek learning	
	CR, pp. 56-58	[Aristotle and the medieval university, #10-12]
	L, pp. 161-70, 203-206, 215-44	
March 7	the medieval reception of Greek learning	
	CR, pp. 58-64	[Aristotle and the medieval university, #13; cosmos illustration]
	L, pp. 215-44, 245-52	
March 12	scientific renaissance: medicine	
	CR, pp. 65-90	[Vesalius, <u>On the fabric of the human body</u> (1543), preface]
	D, pp. 8-9 + pp. 30-33, 37-41, 45-48	[intro, section III + chap. 2, sections I, III, V]
March 14	scientific renaissance: astronomy	
	CR, pp. 92-96	[Copernicus, <u>On the revolutions</u> (1543), 'To his holiness' and Book 1, introduction]
	D, pp. 18-24 + pp. 33-37	[chap. 1, section III + chap. 2, section II]

March 19	heliocentrism CR, pp. 91-92, 97-101 D, pp. 41-45	[Copernicus, <u>On the revolutions</u> (1543), selections; diagrams] [chap. 2, section IV]
March 21	Tycho and Kepler CR, pp. 102-108 D, pp. 74-78	[Tycho and Kepler, illustrations and diagrams]
March 26 / 28	SPRING BREAK – no class	
April 2	Galileo and the telescope CR, pp. 109-20 D, pp. 67-71, 104-8	[timeline; Galileo, <u>Sidereal messenger</u> (1610), selections] [chap. 4, section II and chap. 6, section II]
April 4	the Galileo affair CR, pp. 121-32 D, pp. 104-8 (review)	[Galileo timeline and documents]
April 9	EXAM (in class)	
April 11	the skeptical crisis CR, pp. 133-36 D, pp. 80-84	[Descartes, <u>Discourse on the method</u> (1637), part 1] [chap. 5, section I]
April 16	mechanical philosophies CR, pp. 137-38 D, pp. 84-86	[Descartes, <u>Principles of philosophy</u> (1644/1647), selections] [chap.5, section II]
April 18	the Cartesian world CR, pp. 139-44 D, pp. 86-100	[Descartes, <u>The world</u> (1633/1677), chaps. 5-7] [chap.5, sections III-VI]
April 23	Newton CR, pp. 145-47 D, pp. 149-63	[Newton, <u>Opticks</u> (1706/1717), Query 31, selections] [chap. 8, sections I-II, especially section II]
April 25	Newtonianism CR, pp. 148-50 D, pp. 163-67	[Newton, <u>Principia</u> (1687/1713), 'General Scholium'] [chap. 8, sections II-III]
April 30	the Royal Society CR, pp.151-60 D, pp. 57-64 + pp. 117-30	[Bacon, 'Preparative', selections; Sprat, <u>History</u> (1667), selections; Woodward, <u>Brief instructions</u> (1696), selections] [chap. 3, sections III-IV + chap. 6. sections IV-V]
May 2	the Royal Academy of Sciences CR, pp. 161-72 D, pp. 114-17	[Academy of Sciences statutes; Cassini, 'Voyages', 1684] [Academy of Sciences]
May 7	science and society CR, pp.173-85 D, pp. 57-64 (review)	[Bacon, <u>New Atlantis</u> (1627), selections]
May 9	science and society CR, pp. 186-201	[Swift, <u>Gulliver's travels</u> (1735), part 3, selections]
May 15	FINAL EXAM (Wednesday, 2:25PM)	