

**INTEGRATED LIBERAL STUDIES 201: Western culture: Science, technology, and philosophy I**

Spring 2013

Lectures: 12:05 pm–12:55 pm MW

132 Noland

instructor: Florence Hsia

229 Bradley Memorial

office hours: 1:30–3:30 pm Tu & by appt.

262-3971

[fchia@wisc.edu](mailto:fchia@wisc.edu)

teaching assistant: Jacob Tootalian

office: see section syllabus

office hours: see section syllabus

[tootalian@wisc.edu](mailto:tootalian@wisc.edu)

**COURSE SUMMARY**

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This class emphasizes the skills of analyzing historical documents and of constructing persuasive arguments in answer to historical questions.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 vital that you complete the readings assigned for each class session before coming to class. Bring the readings with you to all lectures and discussion sections.**

**COURSE REQUIREMENTS AND GRADING**

1. Attend lectures and discussion sections.
2. Prepare readings for the day they are assigned.
3. Grades will be based on class participation in discussion sections, (nearly) weekly quizzes or other exercises in discussion sections, and 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, <b>Wednesday, February 20</b> )  | ~20% |
| exam 2 (in class, <b>Wednesday, March 20</b> )     | ~20% |
| exam 3 (due <b>Wednesday, May 15, by 5:00 pm</b> ) | ~30% |

**COURSE POLICIES**

I will make every effort to honor requests for reasonable accommodations made by persons with disabilities. If you think you may 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. Plagiarism and other forms of academic misconduct carry penalties. **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. Consult the Writing Center’s guide to quoting sources <<http://writing.wisc.edu/Handbook/QuotingSources.html>>.

## TEXTBOOKS

Course readings are available via Learn@UW except for the following textbooks:

**L** = David C. **Lindberg**, *The beginnings of Western science* (2<sup>nd</sup> edition, 2007); purchase at the University Book Store

**D** = Peter **Dear**, *Revolutionizing the sciences* (2001 or 2009 edition); purchase at the University Book Store

Textbooks may be consulted on reserve at College Library, Helen C. White Hall.

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## SCHEDULE OF READINGS AND ASSIGNMENTS

- Jan. 23 (W)      **course introduction; Homeric and Milesian world views**  
Homer, *The Odyssey*, selections; Milesians  
Lindberg (L), 1–3, 21–29
- Jan. 28 (M)      **Greek medicine**  
healing cults; ‘The sacred disease’  
L, 111–19
- Jan. 30           **Greek natural philosophy**  
Eleatics, pluralists, and atomists  
L, 29–34
- Feb. 4           **Plato**  
Plato, *Republic* and *Timaeus*, selections  
L, 34–44
- Feb. 6           **Aristotle (I)**  
Aristotle, *Physics*, book II, chaps. 3, 7–8  
L, 45–52
- Feb. 11          **Aristotle (II)**  
Aristotle, *Physics*, book II, chaps. 3, 7–8  
L, 52–66
- Feb. 13          **Greek cosmology**  
daily phenomena (photo, diagrams); Ptolemy, *Almagest*, book I, chaps. 2–4, 7  
L, 41–43, 86–87
- Feb. 18          **Greek astronomy**  
planetary phenomena (diagrams, photo); Ptolemaic models (diagrams)  
Ptolemaic model (Mars): <http://astro.unl.edu/classaction/animations/renaissance/marsorbit.html>  
L, 88–105 (diagrams = L, 100–104, figs. 5.10–5.15)
- Feb. 20 (W)      **EXAM 1 in class**
- Feb. 25          **Hellenization and education**  
Abelard, Anselm, and Bernard of Clairvaux  
L, 67–81 (skim), 132–62, 193–215, 218–24
- Feb. 27          **Greek learning in the medieval university**  
reaction to Aristotle, documents #10–13  
L, 215–18, 225–53

- March 4            **scientific renaissance: medicine**  
Mondino de' Luzzi, *Anatomy* (1316), in *Fascicolo di medicina* (1493), illustration  
Vesalius, *On the fabric of the human body* (1543), selections  
Dear (D), chap. 2, section III (36–40 in 2009 edition)  
Vesalius details: <http://hos.ou.edu/galleries/16thCentury/Vesalius/1543-det/>  
Vesalius initials: <http://hos.ou.edu/galleries/16thCentury/Vesalius/1543-initials/>
- March 6            **scientific renaissance: astronomy**  
Peurbach, *New theoric of the planets* (c.1474), images  
Sacrobosco, *Sphere* (1482), images  
L, 254–70  
D, intro, section III; chap. 1, sections I–III; chap. 2, sections I–II (pp. 7–23, 29–32 in 2009 edition)
- March 11          **heliocentrism**  
Copernicus, *On the revolutions* (1543), selections; diagrams  
D, chap. 2, section II (32–36 in 2009 edition)  
retrograde motion: <http://astro.unl.edu/classaction/animations/renaissance/retrograde.html>
- March 13          **responses to heliocentrism**  
Copernicus, *On the revolutions* (1543), 'To the reader concerning the hypotheses'  
Brahe, *Instruments [Mechanica]* (1602), illustrations; diagrams  
Brahe, *On the most recent phenomena* (1588/1610), selections  
D, chap. 2, section IV and chap. 6, section I (pp. 40–43, 99–101 in 2009 edition)
- March 18          **heliocentrism**  
Kepler, *Cosmographical mystery* (1596), illustration; diagrams  
Kepler, *Rudolphine tables* (1627), illustration  
Galileo, *Sidereal messenger* (1610), selections  
D, chap. 4, sections I–III + chap. 6, section II (pp. 64–77, 101–106 in 2009 edition)
- March 20 (W) EXAM 2 in class**
- March 25–27      **SPRING BREAK**
- April 1            **the Galileo affair (I)**  
timeline; Castelli-Galileo letters (1613)  
Council of Trent decrees  
Venus phases (Ptolemaic) <http://astro.unl.edu/classaction/animations/renaissance/ptolemaic.html>  
Venus phases (Copernican) <http://astro.unl.edu/classaction/animations/renaissance/venusphases.html>
- April 3            **the Galileo affair (II)**  
Bellarmine-Foscarini letter (1615)  
Inquisition & Index documents (1616)  
Vatican letters (1631)  
Galileo, *Dialogue on the two chief world systems* (1632), selections
- April 8            **the skeptical crisis**  
Descartes, *Discourse on the method* (1637), part 1  
Vespucci illustrations  
*Of two woonderful Popish monsters* (1586), selections  
Paré, *On monsters and prodigies* (1573), selections  
D, chap. 5, section I (pp. 79–82 in 2009 edition)

- April 10      **the Baconian project**  
Bacon, *Great instauration* (1620), title page and ‘Preparative’, selections  
Bacon, *Sylva sylvarum* (1627), selections  
D, chap. 3, sections III–IV (pp. 55–63 in 2009 edition)
- April 15      **experiment**  
Galileo, *Dialogue on the chief two world systems* (1632), selection  
Boyle, “New experiments,” *Philosophical transactions* 3 (1668): 581–600  
D, chap. 7 (pp. 127–44 in 2009 edition)
- April 17      **mechanical philosophies**  
Descartes, *Principles of philosophy* (1644/1647), selection  
D, chap. 5, section II (pp. 83–85 in 2009 edition)
- April 22      **the Cartesian world**  
Descartes, *The world* (1633/1677), chaps. 5–7  
Descartes, *Principles of philosophy* (1644), illustration  
Descartes, *Discourse on the method* (1637), title page  
Fontenelle, *Conversations on the plurality of worlds* (1686), selection  
D, chap. 5, sections III–VI (pp. 85–98 in 2009 edition)
- April 24      **the Newtonian world**  
Newton, *Mathematical principles* (1687/1729), book 3, selection; notes  
Newton, “The system of the world” (1685), selection; notes  
Newton, *Opticks* (1706/1717), “Query 31,” selection  
D, chap. 8, sections I–II (pp. 145–60 in 2009 edition)
- April 29      **Newtonianism**  
Newton, *Mathematical principles* (2<sup>nd</sup> ed., 1713), “General Scholium” and reading guide  
D, chap. 8, sections II–III (pp. 154–63 in 2009 edition)
- May 1      **scientific communities** (no class meeting)  
*Philosophical transactions* exercise  
*Philosophical transactions* 1 (1665): 1–16 and Oldenburg, “To the Royal Society”
- May 6      **scientific societies**  
Sprat, *History of the Royal Society* (1667), title page and illustration  
Le Clerc, ‘Louis XIV visits the Academy of Sciences’, illustration  
Bacon, *Great instauration* (1620), *Sylva sylvarum* (1627), title pages  
Bacon, *New Atlantis* (1627), selections  
D, chap. 6, section IV (pp. 109–120 in 2009 edition)
- May 8      **science and society**  
Swift, *Gulliver’s travels* (1726/1727), part 3, selections  
D, chap. 6, sections IV–V and conclusion (pp. 120–26, 164–66 in 2009 edition)
- May 15 (W)      **EXAM 3 due Wednesday, May 15, by 5:00 pm**