

History 106

Introduction to the History of Science:

THE SCIENTIFIC REVOLUTION

Professor Robert S. Westman

Fall Quarter 2012

Tu Th 11:00 a.m.-12:20 p.m.

Warren Lecture Hall 2008

Office: H&SS 4072; Tel. 534-6317

Office Hours: Wed., 1-3; after class some Tuesdays & by appt.

Instructor's email: rwestman@ucsd.edu

Required Reading (Available at UCSD Bookstore)

Book Abbreviations in square brackets below [=]

Peter Dear. **Revolutionizing the Sciences: European Knowledge and Its Ambitions, 1500-1700. Princeton Univ. Press, 2001 [=RS]

René Descartes. **Discourse on Method. Hackett Publishing Co. [=DM]

Thomas S. Kuhn. **The Copernican Revolution. Harvard University Press, 1957 [=CR]

**Galileo Galilei. *Sidereus nuncius* or *The Sidereal Messenger*. Tr. Albert Van Helden. Univ. of Chicago Press, 1989.

****Additional readings available on "Ted (WebCt)" + Online**

Recommended Reading.

--Owen Gingerich. **The Book Nobody Read: Chasing the Revolutions of Nicolaus Copernicus**. New York: Walker, 2004.

--Robert S. Westman, **The Copernican Question: Prognostication, Skepticism and Celestial Order**, University of California Press, 2011. Available online through Geisel Library.

Lecture Topics and Associated Readings

Part I: The Copernican Question

1) **Introduction. The University: What would you have learned in the 16C?**

Where would you have learned it?

2) **The University Curriculum I: Aristotelian Natural Philosophy**

(a) Dear, **RS**, pp. 1-18; (b) Kuhn, **CR**, ch. 3.

3) **The University Curriculum II: The Science of the Stars**

(a) Kuhn, **CR**, chaps. 1, 2; (b) Westman, *The Copernican Question*, chap. 2, pp. 62-75 [Geisel online]; (c) Dear, **RS**, pp. 18-29; (d) Animations of planetary motions by Prof. Dennis Duke [Google: "Dennis Duke"> "Almagest Planetary Model Animations"; Scroll down to "II. Stand Alone Versions"]; (d) "Ptolemy": Wikipedia online.

4) **Copernicus's Reform: What did he do? Why did he do it?**

Read: (a) Dear, **RS**, pp. 30-45; (b) Kuhn, **CR**, pp. 123-184; (c) Westman, *The Copernican Question*, chap. 3; (d) Copernicus, **Commentariolus** [Ted]; (e) Dennis Duke Animations

5) **The Copernicans and the Churches: Convincing Catholic Rome and Lutheran Wittenberg**

(a) Westman, "The Melanchthon Circle, Rheticus and the Wittenberg

Interpretation of the Copernican Theory" [Ted]; (b) Westman, "The Copernicans and the Churches, pp. 76-98" [Ted];

c) Kuhn, **CR**, pp. 185-196.

6) **The First Copernicans, Tycho Brahe and Unexpected, Singular Heavenly Novelties.**

Read: (a) Kuhn, **CR**, 200-209; (b) Dear, **RS**, pp. 76-77.

7) **Kepler: From the *Cosmographic Mystery* to the *New Astronomy***

Kuhn, **CR**, pp. 209-219; Voelkel, **Kepler**, pp. 24-73 [Ted].

8) **Kepler and Galileo: Unexpected, Recurrent Novelties in the Heavens**

Read: (a) Dear, **RS**, pp. 65-79, 101-111; (b) Kuhn, **CR**, 219-225; (c) Galileo, *Sidereal Messenger*.

MID-TERM EXAMINATION: November 13

Part II: The Transformation of 17C Natural Philosophies

9) **New Visions and Places of Scientific Authority in the Seventeenth Century**

Read: Dear, **RS**, pp. 111-130; Popkin, **History of Scepticism**, Introd., chap. 1 [Ted]

10) **Divine Activity and the Mechanical Philosophy**

Read: (a) Dear, **RS**, pp. pp. 80-100; (b) Kuhn, **CR**, pp. 238-242; 252-4; (c) Descartes, **DM** (entire). Peruse "Rene Descartes" (Wikipedia online)

11) **The Science of Politics and the Politics of Experiment: Galileo, Thomas Hobbes and Robert Boyle**

Read: (a) Dear, **RS**, pp. 131-148; (b) W.T. Jones, **A History of Western Philosophy**, vol. 3, pp. 104-114 [Ted]; c) Shapin, "Pump and Circumstance" [Ted]; (e) The Principle of the Barometer. Excerpts from Evangelista Torricelli (1644) and Robert Boyle (1660) [Ted]

12) **Atheism Resolved: How Sir Isaac Newton Restored Law n'Order to the West'**

Read: (a) Dear, **RS**, pp. 149-170; (b) Kuhn, **CR**, pp. 252-265; c) Newton Project Website: www.newtonproject.sussex.ac/prism.php?id=26 [Life and Character >"Life and Work at a Glance"; "Personal Life"]

Grading Requirements

+**Mid-Term Examination** (1/3): Short answer; multiple choice

+**Final Examination** (2/3): Essay: Take-home exam

+**Final Exam Date: WEDNESDAY, DECEMBER 12, 11:30-2:30**