

**History 106**  
**Introduction to the History of Science:**  
**THE SCIENTIFIC REVOLUTION**  
**Professor Robert S. Westman**  
**Winter Quarter 2015**  
**Tu Th 2:30 p.m.-3:20 p.m.**  
**Cognitive Science Bldg. 004**

Office: H&SS 4072

Office Hours: Tu., 3:30-5:30 p.m.; also by appt.

Instructor's email: [rwestman@ucsd.edu](mailto:rwestman@ucsd.edu)

Reader: Yolanda Fay Hartley

**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, 2009. 2nd edition [=RS]

\*\*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 required readings available on "TED", online and Geisel Library (online)

**Recommended Reading.**

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

**Lecture Topics and Associated Readings**

**Part I: The Copernican Revolution.**

1) Introduction.

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: Prognostication, Skepticism and Celestial Order*, 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"]; (e) "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, Reticus 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* (all)

**MID-TERM EXAMINATION: February 17**

## **Part II: The Transformation of 17C Natural Philosophies**

### 9) **Francis Bacon and the Baconian Vision of Science: From the 17C to the 19C**

Read: Dear, **RS**, pp. 111-130; Popkin, **History of Scepticism**, Introd., chap. 1 [TED]; Laura Snyder. *The Philosophical Breakfast Club and the Invention of the Scientist*. 2011 Dibner Library Lecture:

[http://library.si.edu/sites/default/files/pdf/general\\_pages/2011-DibnerLecture-LauraSnyder.pdf](http://library.si.edu/sites/default/files/pdf/general_pages/2011-DibnerLecture-LauraSnyder.pdf) ; Carolyn Merchant, "

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

Read: (a) Dear, **RS**, pp. 80-100; (b) Kuhn, **CR**, pp.238-242; 252-4;(c) "Rene Descartes" (Wikipedia online); Carolyn Merchant: "The Death of Nature: Women, Ecology and the Scientific Revolution" (TED); I. Bernard Cohen, "Revolution in Science" (TED)

SHORT PAPER DUE: March 3

### 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](http://www.newtonproject.sussex.ac/prism.php?id=26) [Life and Character >"Life and Work at a Glance"; "Personal Life"]

## **Grading Requirements**

+**Mid-Term Examination** (25%): Short answer; multiple choice. February 17

+**Short Paper** (25%): March 3

+**Final Examination** (50%): Essay: Take-home exam

+**Final Examination**: March 19, 3-6 p.m.