

# Phil 401: The Scientific Revolution and The Mechanical Philosophy

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## COPERNICANISM

January 3rd (Tue.) - Introduction to class themes

January 5th (Thurs.) - Ancient astronomical data and the Two-Sphere System

*Readings:* Kuhn, *The Copernican revolution*. Chapter 1.

January 10th (Tues.) - The Problem of the Planets

*Required Readings:* Kuhn, *The Copernican revolution*. Chapter 2.

January 12th (Thurs.) - Aristotle and the Two-Sphere System

*Required Readings:* Kuhn, *The Copernican revolution*. Chapter 3.

January 17th (Tues.) - Copernicus

*Required Readings:* Kuhn, *The Copernican revolution*. Chapter 5.

January 19th (Thurs.) - The Telescope and Heliocentrism

*Required Readings:*

- Galileo. “The Sidereal Messenger.” In Galilei, *The Essential Galileo*. Chapter 4. Pages 45-70 and 83-84.
- Galilei and Scheiner, *On sunspots*. Pages 1-2 and 97-102.

January 24th (Tues.) - Heliocentrism after Copernicus

*Required Readings:*

- Galileo. Letter to Dutchess Christina. In Oster, *Science in Europe, 1500-1800*. Pages 66-71.
- Cardinal Bellarmine’s Letter to Foscarini. In Oster, *Science in Europe, 1500-1800*. Pages 71-73.
- Galileo. “Considerations on the Copernican Opinion, Part I.” In Galilei, *The Essential Galileo*. Pages 148-156.
- Descartes. *Principles of Philosophy* in Descartes, *The Philosophical Writings of Descartes*. Vol. 1. Pages 248-258.

## THE MECHANICAL PHILOSOPHY

January 26th (Thurs.) - Theories of Motion

- Galileo. “Dialogue Concerning the Two Chief World Systems.” In Oster, *Science in Europe, 1500-1800*. Pages 77-82.
- Descartes. *Principles of Philosophy*. Part II. Articles 36-45. In Descartes, *The Philosophical Writings of Descartes*. Vol. 1. Pages 240-244.

January 27th (Fri.) - **First Paper Due at Midnight**

January 31st (Tues.) - The Barometer and the Airpump

*Required Readings:*

- Pascal. Excerpt from “Story of the Great Experiment on the Equilibrium of Fluids.” In Oster, *Science in Europe, 1500-1800*. Pages 133-135.

- James Conant. “Robert Boyle’s Experiments in Pneumatics.” In Conant, *Harvard case histories in experimental science*. Pages 1-30 and 49-62.

February 2nd (Thurs.) - The Microscope

*Required Readings:* Excerpts from Hooke, *Micrographia*. See .pdf document on Canvas.

February 7th (Tues.) - Aristotle on Logic and Explanation

*Required Readings:* Sections 1-4 and 7-9 of Shields, “Aristotle”.

February 9th (Thurs.) - Atomism and Corpusclaranism *Required Readings:*

- Epicurus. “Letter to Herodotus.” In Inwood and Gerson, *Hellenistic philosophy*. Pages 5-19.
- Boyle, “The Grounds for and Excellence of the Corpuscular or Mechanical Philosophy”

February 10th (Fri.) - **Second Paper Due at Midnight**

February 14th (Tues.) - Primary and Secondary Qualities

*Required Readings:*

- Galileo. “The Assayer.” In Oster, *Science in Europe, 1500-1800*. Pages 73-75.
- Galileo. “History and Demonstrations Concerning Sunspots.” In Galilei, *The Essential Galileo*. Chapter 3. Pages 101-102.
- Locke, *An essay concerning human understanding*
  - Book II. Chapter VIII. Articles 8-26.
  - Book IV. Chapter III. Articles 11- 14.
- Descartes. *Principles of Philosophy*. Part I. Articles 68-70. In Descartes, *The Philosophical Writings of Descartes*. Vol. 1. Pages 217-219.
- Descartes. *Meditations on First Philosophy*. In Descartes, *The Philosophical Writings of Descartes*. First Meditation. Pages 12-16.
- Manuscript G3 in the Archive of the Sacred Congregation for the Doctrine of the Faith. In Oster, *Science in Europe, 1500-1800*. Pages 75-77.

February 16th (Thurs.) - Bacon’s Epistemology

*Required Readings:* Bacon. *Novum Organon*.

- Book I. Aphorisms 1-3,14-15, 19, 31, 39-44, 50, 70, 100-103.
- Book II. Aphorisms 1, 11-13 (you may skim the long lists), 18, and 20.

February 21st (Tues.) - Cartesian Epistemology

*Required Readings:*

- *Rules for Direction of the Mind*. Rule 4. Lines 371-374. In Descartes, *The Philosophical Writings of Descartes*. Vol. 1.
- *Principles*. Part I. Articles 1-9 and 71-74. In Descartes, *The Philosophical Writings of Descartes*. Vol. 1. Pages 193-195 and 218-222
- *Discourse on method*. Part II. In Descartes, *The Philosophical Writings of Descartes*. Vol. 1. Pages 126-132.

February 23rd (Thurs.) - The Scientific Revolution I

*Required Readings:* Shapin, *The scientific revolution*. Chapter 1.

February 28th (Tues.) The Scientific Revolution II  
*Required Readings:* Shapin, *The scientific revolution*. Chapter 2.

March 2nd (Thurs.) - Course Review  
*Required Readings:* Review your notes and reading assignments.

March 3rd (Fri.) - **Final Paper Due at Midnight.**

March 7th (Thurs.) - Revolutionary Interpretations of 1500-1800  
*Required Readings:*

- Butterfield, *The origins of modern science*. Introduction and Chapter 10.
- Koyré, *From the closed world to the infinite universe*. Introduction and final chapter.

March 9th (Tues.) - Non-Revolutionary Interpretations  
*Required Readings:* Shapin, *The scientific revolution*. Chapter 3.

## REFERENCES

- [1] R. Boyle. “The Grounds for and Excellence of the Corpuscular or Mechanical Philosophy”. In: ed. by J. Bennett. 2015.
- [2] H. Butterfield. *The origins of modern science*. Vol. 90507. Simon and Schuster, 1997.
- [3] J. B. Conant. *Harvard case histories in experimental science*. Vol. 1. Harvard University Press, 1957.
- [4] R. Descartes. *The Philosophical Writings of Descartes*. Ed. by J. Cottingham, R. Stoothoff, and D. Murdoch. Vol. 1. Cambridge University Press, 1984.
- [5] R. Descartes. *The Philosophical Writings of Descartes*. Ed. by J. Cottingham, R. Stoothoff, and D. Murdoch. Vol. 2. Cambridge University Press, 1984.
- [6] G. Galilei. *The Essential Galileo*. Ed. by M. A. Finocchiaro. Hackett Publishing, 2008.
- [7] G. Galilei and C. Scheiner. *On sunspots*. Ed. by E. Reeves and A. Van Helden. Chicago, IL, USA: University of Chicago Press, 2010.
- [8] R. Hooke. *Micrographia OR SOME Physiological Descriptions OF MINUTE BODIES MADE BY MAGNIFYING GLASSES WITH OBSERVATIONS and INQUIRIES thereupon*. 1665.
- [9] B. Inwood and L. P. Gerson, eds. *Hellenistic philosophy: Introductory readings*. Hackett Publishing, 1997.
- [10] A. Koyré. *From the closed world to the infinite universe*. Vol. 1. Library of Alexandria, 1957.
- [11] T. S. Kuhn. *The Copernican revolution: Planetary astronomy in the development of Western thought*. Harvard University Press, 1957.
- [12] J. Locke. *An essay concerning human understanding*. Ed. by J. Bennett. 2015.
- [13] M. Oster. *Science in Europe, 1500-1800: a primary sources reader*. Palgrave, 2002.
- [14] S. Shapin. *The scientific revolution*. University of Chicago Press, 1996.
- [15] C. Shields. “Aristotle”. In: *The Stanford Encyclopedia of Philosophy*. Ed. by E. N. Zalta. Winter 2016. Metaphysics Research Lab, Stanford University, 2016.