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PHI 511/HOS 591  
Reason and Experiment in Early Modern Natural Philosophy  
Spring 2025  
Prof. Daniel Garber  
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In this seminar, we will explore the uses of experience and reason in exploring nature in the early modern period, roughly from the late sixteenth century to the middle of the eighteenth century. Some, like the debates over the vacuum, or scientific method, will be familiar, but some like the existence of ghosts and witches, or the history of the earth, may be less so. In each case we will be particularly interested in understanding the different ways in which experience and rational arguments are used to arrive at conclusions about the way the world is. Below I have set out a tentative program for us to explore.

Philosophy graduate students are encouraged to use the seminar to write a unit paper. Other students taking the course for a grade will be required to write a term paper. All students—including those who are auditing the course—are encouraged to choose an appropriate topic for research on a question related to the theme, but one not explicitly covered in the syllabus. Toward the end of the term, there will be an opportunity for students to give short presentations (15-20 minutes) on their research topic to supplement the work we have done in class. While the term papers and unit papers have to be individual, students are encouraged to work together on the projects that lead to class presentations. At the first meeting we will talk more about how that will work, and at the second meeting discuss specific projects that you might want to take up.

While much of the material we will discuss will be made available on Canvas for you to download, and some will be available online, the following books have been ordered through the Princeton Online Bookstore:

Descartes, ed. and trans. Cottingham, Stoothoff, and Murdoch, *The Philosophical Works of Descartes*, vol. I (Cambridge University Press, 1985) [CSM I] [This is also available online on “Past Masters,” the “Continental Rationalism” collection

Descartes, ed. and trans. Ariew, *The World* (Hackett, 2023)

Bacon, ed. Jardine and Silverthorne, *The New Organon* (Cambridge University Press, 2000)

Shaffer and Shapin, *Leviathan and the Air-Pump* (Princeton University Press, 2011) [This is the second edition]

Leibniz and Clarke, ed. Ariew, *Correspondence* (Hackett, 2000)

Below are the tentative readings for the term. I realize that the program of the seminar is wildly overambitious; the syllabus may be altered as we go. Before each session of the seminar, I will send out a long note, with some thoughts about how to approach the readings and what the emphasis in class will be.

### Tentative Schedule of Sessions [Subject to revision]

Week 1 (Jan. 30): Introductory remarks and Descartes I: Method and experiment

Readings:

Descartes: *Rules for the Direction of the Mind*, Rules 1-8, with particular attention to Rules 5-8.

Descartes, *Meteorology*, discourse 8 (On the Rainbow) [Available on Canvas]

Garber, “Descartes and Experiment in the *Discourse and Essays*” [On Canvas]

Buchwald, Jed, “Descartes’s Experimental Journey Past the Prism and Through the Invisible World to the Rainbow” [On Canvas, Optional]

Week 2 (Feb. 6): Descartes II: Descartes meets Galileo

Readings:

Excerpts from Galileo, *Two New Sciences* [On Canvas]

Garber, “A Different Descartes” [On Canvas]

Babeş, Ovidiu, “Mixed mathematics and metaphysical physics: Descartes and the mechanics of the flow of water” [On Canvas]

Week 3 (Feb. 13): Descartes vs. Pascal on the Vacuum

Readings:

Texts from Descartes and Pascal and others to be posted in Canvas.

Week 4 (Feb. 20): Baconian Experimentation

Readings:

Bacon, “Great Instauration” and excerpts from the *New Organon*

Excerpts from Bacon’s experimental writings [On Canvas]

Week 5 (Feb. 27) Bacon and the Royal Society

Readings:

Bacon, *New Atlantis* [On Canvas]

Spratt, *History of the Royal Society* [On Canvas]

Week 6 (March 6): The Royal Society and the Vacuum: Leviathan and the Air Pump

Readings:

Shapin and Schaffer, *Leviathan and the Air-Pump*  
 Selected texts from Boyle, Hobbes, and others [On Canvas]

Week 7 (March 13) [Spring break]

Week 8 (March 20) Ghosts and Witches in the Royal Society

Reading:

Excerpts from Henry More and Joseph Glanvill, *Saducismus Triumphatus*  
 and other selected authors [On Canvas]

Week 9 (March 27) Experimentation in Alchemy. Visiting session by Jennifer Rampling  
 (Program in the History of Science). Readings to be announced.

Week 10 (April 3): Empirical investigations of the anatomy of the Earth

Reading:

Descartes, from the *Principia philosophiae*, part III [On Canvas]  
 Nicolaus Steno, from the *Prodromus* [On Canvas]

Week 11 (April 10): Newton's theory of color

Reading:

Newton, "New Theory about Light and Colors" and excerpts from the  
*Opticks*. [On Canvas]

Week 12 (April 17): Realism and relativism in time, space, and motion: Descartes,  
 Leibniz, Newton

Reading:

Excerpts from Descartes, *Principia philosophiae*, Newton, *Principia*, and  
 the Leibniz-Clarke Correspondence [On Canvas]

Week 13 (April 24): Gravitation and conclusion

Reading:

Newton, from the *Principia*; the Newton/Bentley correspondence; Cotes's  
 introduction to the second edition of Newton's *Principia*; excerpts from  
 Leibniz. [On Canvas]