Syllabus
Philosophy 2660: Metaphysics, Religion, and Magic in the Scientific Revolution (3 Credit Hours)

Tu/Th 11:30-1:18, JR 0251

Instructor: Professor Downing
E-mail: downing.110@osu.edu
Office hours: M 10:00-11:00, Tu 1:30-2:30, or by appointment, 364 University Hall
Graders:
Jordan Busse
E-mail: busse.23@osu.edu
Office hours: M 11-1 in 214 University Hall
Lindsay Mouchet
E-mail: mouchet.2@osu.edu
Office hours: Tu 10:30-11:30, Th 10:30-11:30

Course Description

The seventeenth century saw revolutionary developments in natural science, specifically, in matter theory, mechanics, chemistry, and astronomy. These developments were intertwined with magical traditions, religious doctrines and disputes, and, *especially*, philosophical theories and arguments. This course will examine some of these connections in the works of some of the most influential natural philosophers of the period. Our main goal is a richer understanding of this crucial period in the development of modern science. In addition, as with any philosophy class, we will evaluate the cogency of the arguments and the consistency and plausibility of the views we encounter.

GEC Expected Learning Outcomes

Historical Study

History courses develop students' knowledge of how past events influence today's society and help them understand how humans view themselves.

1. Students acquire a perspective on history and an understanding of the factors that shape human activity.
2. Students display knowledge about the origins and nature of contemporary issues and develop a foundation for future comparative understanding.
3. Students think, speak, and write critically about primary and secondary historical sources by examining diverse interpretations of past events and ideas in their historical contexts.

Application of GEC Expected Learning Outcomes to This Course

In this course, you will gain perspective on a crucial period in the history of science, and an understanding of some of the factors that have shaped the development of modern science in general, and modern physics in particular. More specifically, we will examine the ways in which developments in natural philosophy (science) in the seventeenth century were inextricably bound up with developments, shifts, and debates in philosophy, theology, and attitudes towards magical traditions. We will do this primarily by considering how to interpret and evaluate the writings of some of the key figures in this period, including Galileo, Descartes, Boyle, Newton, and Leibniz. We will attend to their arguments, in order to see how the physical theories were supposed to work and how, e.g., theology and mechanics were thought to have implications for each other. We will see that the arguments, their motivations, their background assumptions, etc., were not confined to a narrow domain such as physics as we might conceive of it today, but move from religion to metaphysics to matter theory to alchemy (e.g.) and back again. The course requirements will ensure that you learn to think, speak, and write critically about this material. All this, in turn, will help you develop a deeper understanding of how the modern scientific world view was formed, and will provide you with an historically grounded perspective from which to evaluate contemporary debates about the relationship between science and religion.

Required Texts and Other Course Materials

- Matthews, Michael R., ed. *The Scientific Background to Modern Philosophy.* Hackett. (An anthology of primary sources.)

- Henry, John. *The Scientific Revolution and the Origins of Modern Science*, 3rd ed. Palgrave, 2002. (An historical overview.)
- Descartes, René (author). Roger Ariew (editor). *Philosophical Essays and Correspondence*. Hackett.
- G.W. Leibniz and Samuel Clarke (authors). Roger Ariew (editor). *Correspondence.* Hackett.
- PDFs of more required primary and secondary sources will be made available on Carmen.

Evaluation

Exam questions and suggested essay topics will be chosen so as to encourage you to both
(1) demonstrate understanding of some of the key theoretical doctrines advocated by the natural philosophers who advanced the new science of the seventeenth century, as well as some of the historical and philosophical relations among those doctrines. (E.g. Which Aristotelian assumptions about motion and matter were retained by Galileo and Descartes? Why did Newtonian gravitational attraction look problematic in the mechanist context established by Boyle and Descartes?)
(2) identify and explain some of the important connections among physics, metaphysics, methodology, theology, and magical traditions in this period. (E.g. How did metaphysics ground physics in Descartes' system? How did Descartes, Boyle, and Newton differ over the place of appeal to God's design in doing natural philosophy? To what extent did alchemy influence the content of Boyle's or Newton's physics?)
Critical reading, thinking, and writing skills will be essential.

Grade components:

Essay 1, 2 pages, 10%
Midterm Exam, 25%
Essay 2, 3 pages, 25%
Final Exam, 25%
Quick quizzes, plus class participation, 15%

Outline of Topics and Readings (highly revisable!)

Sept 22	Introduction to the course
Sept 27	Aristotle and Aristotelianism—form and matter, teleology Readings: Selections from Aristotle's *Physics*, Matthews pp.5-25. Ch. 1 of Henry, on historiography and "the scientific revolution."
Sept 29	Aristotle and Aristotelianism (continued) Readings: PDF from Shields, *Aristotle*
Oct 4	Aristotle and Ptolemy—ancient astronomy Readings: PDF of Aristotle on the structure of the universe Chapter 2 of Henry, on the Renaissance.
Oct 6	Copernicus Readings: Selections from Copernicus's *The Commentariolus* and *On the Revolutions of the Heavenly Spheres*, Matthews, pp.33-44. Osiander's letter (PDF) Ch. 3 pt. 1 of Henry, "Mathematization of the world picture". PDF of some text and diagrams from Kuhn's *The Copernican Revolution*, esp. p.166.
Oct 11	Galileo Readings: Selections from Galileo's The Assayer, Dialogues Concerning the Two Chief World Systems, Matthews, pp.53-81.

PDF of further material from the Dialogues

Oct 13 — Bacon—taming nature, the new experimentalism
Readings:
Selections from Bacon's *The New Organon*, Matthews, pp.45-52.
Ch. 3 pt. 2 of Henry, "Experience and Experiment".

Oct 18 — Magic, astrology, and the new science
Readings:
Ch. 4 of Henry, "Magic and the Origins of Modern Science".
PDF of "Astrology," H. Darrel Rutkin, pp.542-561 from *Early Modern Science* (Cambridge 2006), eds. Park and Daston. PDF of Lewis on Digby and the "weapon salve".
1st essay due

Oct 20 — Mechanism and Descartes
Reading:
Excerpts from The World, Descartes.

Oct 25 — Descartes—rationalist philosophical foundations for mechanist physics
Readings:
Part 1 of the Principles of Philosophy, Descartes pp.222-253

Oct 27 — **MIDTERM**

Nov 1 — Descartes—a physics founded on metaphysics
Readings:
Excerpts from Parts 2, 3, 4 of the Principles of Philosophy, Descartes, pp.253-272, and supplementary PDFs.
Ch. 5 of Henry, "The Mechanical Philosophy."

Nov 3 — Descartes, continued.

Nov 8 — Boyle—empiricist mechanism, primary affections vs. sensible qualities, chemistry and alchemy
Selections from Boyle's *The Origin of Forms and Qualities (*PDF*)*, PDF of Newman on alchemy

Nov 10 — Boyle (continued)
Readings:
Excellency and Grounds of the Mechanical Hypothesis, in Matthews

Nov 15 — Newton's theory of gravity—attractionism contra mechanism, alchemical influences, God as Pantocrator
Readings:
Selections from Newton's *Principia* and *Opticks*, Matthews pp.133-158.
PDF of excerpts from Newton's correspondence with Bentley, correspondence with Leibniz (pp. 94-117 in Isaac Newton, *Philosophical Writings*, ed. Janiak, Cambridge).

Nov 17 — Newton (continued)
Readings:
Ch. 6 of Henry, "Religion and Science," pp.85-97.
PDF of Betty Jo Teeter Dobbs, "Newton's Alchemy and his Theory of Matter" (pp. 315-325 in *Newton*, eds. Cohen and Westfall, Norton).

Nov 22 — Leibniz vs. Clarke, mechanism vs. Newtonianism, absolute vs. relational accounts of space, intelligentia supramundana vs. intelligentia mundana (i.e. is God beyond the world or in it?).
Readings:
Leibniz-Clarke Correspondence

Nov 24 — Thanksgiving

Nov 29	Leibniz-Clarke correspondence (continued) Readings: Ch. 7 of Henry, "Science and the Wider Culture," and "Conclusion." **2nd Essay due**
Dec 1	Review

Final exam: Tuesday Dec. 6 from 11:30 until 1:18

Important note:
I reserve the right to change reading assignments, make short written assignments, and adjust due dates for assignments, exams, and essays as the course goes along. If you miss class, you need to check to find out what you missed. I will post announcements regularly on Carmen.

Advice
Philosophical texts are typically difficult reading. Ideally you should read all assigned material twice; once before class discussion (so that you are in a position to understand, enjoy and participate in discussion) and once after discussion, when it will be easier to identify the most important elements of the argument and see how they fit together.

Academic Misconduct
It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct (http://studentaffairs.osu.edu/info_for_students/csc.asp).

Academic misconduct vs. academic integrity
The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student. Ignorance of the University's *Code of Student Conduct* is never considered an "excuse" for academic misconduct, so I recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that someone has violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in the course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct to which you can refer include:
- The OSU Committee on Academic Misconduct (COAM) web pages: http://oaa.osu.edu/coam.html
- OSU 10 Suggestions for Preserving Academic Integrity: http://oaa.osu.edu/coamtensuggestions.html
- *Eight Cardinal Rules of Academic Integrity:* http://www.northwestern.edu/provost/students/integrity/rules.html
- How not to plagiarize: http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize

Disability Services
Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. The Office for Disability

Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; http://www.ods.ohio-state.edu/.