

Dr. Laurence Carlin

Philosophy 426: *Philosophy and the Scientific Revolution*

Fall 2011

Office Hours: MWF 2 PM – 3 PM, and by appointment

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Required Course Texts

1. Michael Matthews, ed., *The Scientific Background to Modern Philosophy* (Hackett Publishing, 1989).
2. G.W. Leibniz and Samuel Clarke, *The Leibniz-Clarke Correspondence*, Roger Ariew, ed. (Hackett Publishing, 2000).
3. Isaac Newton, *Philosophical Writings*, Andrew Janiak, ed. (Cambridge UP, 2004).
4. Various Readings on E-reserve.

Course Description and Objectives

In this course we will examine the interaction between philosophy, science, and religion during the 17th century, the century of the Scientific Revolution. In particular, we will discuss the debates that arose over scientific methodology, the nature of material objects, God's relation to the creation, and the nature of gravitational attraction. All of these issues came together in the famous conflict between Gottfried Leibniz and Isaac Newton at the end of the 17th century. This conflict was primarily about proper scientific method, that of the "mechanical philosophy" practiced on the Continent, and that of the "experimental philosophy" practiced in the UK. The course will end with an intense examination of this conflict. The objective is for students to come to develop an understanding of the evolution of their own intellectual inheritance.

We will begin with a study of the Medieval background to the Scientific Revolution in order to grasp more fully why this period is regarded as revolutionary. We will then take a close look at some the early philosophers and scientists who reacted against this tradition: Copernicus, Galileo, Francis Bacon, René Descartes, and Robert Boyle, each of whom was a devotee of the new science and philosophy, but with significant disagreements. Finally, we will then turn to an intense examination of the heated dispute between Leibniz and Newton by first studying Leibniz's philosophy, Newton's writings, and the series of letters exchanges between Leibniz and the Newtonian, Samuel Clarke.

Course Schedule (Subject to Change)

I. TRADITIONAL ARISTOTELIANISM

1. Introduction and Historical Background

- Reading: Aristotle, *Physics*, Book II, chaps. 1-3 (in Matthews, pp. 7-15)
 Aristotle, *Physics*, Book II, chaps. 7-8 (handout)
 Aristotle, *On the Heavens*, Book II, chap. 14 (handout)
 Daniel Sennert, *Thirteen Books of Natural Philosophy* (selections on e-reserve)
 Daniel Widdowes, *Natural Philosophy, or A Description of the World*
 (selections on e-reserve)
 Richard DeWitt, “The Structure of the Universe on the Aristotelian
 Worldview” (e-reserve)

II. THE REVOLUTION BEGINS

2. Against Aristotelianism: The Geocentric Model Challenged

- Reading: Copernicus, *The Commentariolus* (selections in Matthews, pp. 33-40)
 Copernicus, *On the Revolutions of the Heavenly Spheres* (selections in
 Matthews, pp. 40-45)
 Richard DeWitt, “Galileo and the Evidence from the Telescope” (e-reserve)
 Galileo, “Letter to Castelli” (e-reserve)
 Galileo, “Cardinal Bellarmine’s Letter to Foscarini” (e-reserve)
 The 1616 Special Injunction by the Catholic Church
 Galileo, *The Assayer* (selection in Matthews, pp. 56-61)
 Galileo, *Dialogues Concerning Two Chief World Systems* (selections in
 Matthews, pp. 61-76)

3. Against Aristotelianism: Bacon’s New Method of Induction

- Reading: Francis Bacon, *The New Organon* (selections in Matthews, pp. 45-52)
 Laurence Carlin, *The Empiricists*, chap. 2 (e-reserve)
 Francis Bacon, selection of passages on final causes (handout)

4. Against Aristotelianism: Descartes’ Mechanical Philosophy

- Reading: René Descartes, *Discourse on the Method* (selections in Matthews, pp. 92-94)
 René Descartes, *Principles of Philosophy* (selections in Matthews, pp. 94-108)
 René Descartes, *The World* (handout of selections)
 René Descartes, *Treatise on Man* (handout of selections)
 René Descartes, selection of passages on final causes (handout)

5. Against Aristotelianism: Boyle’s Experimental Philosophy

- Reading: Robert Boyle, *The Origin of Forms* (handout of selections)
 Robert Boyle, *The Excellency of the Mechanical Philosophy* (Matthews, pp.
 109-123)
 Laurence Carlin, “The Importance of Teleology to Boyle’s Natural Philosophy”

III. THE REVOLUTION CONCLUDES

6. The End is Near: Leibniz and Newton

Reading: G.W. Leibniz, *Discourse on Metaphysics* (selections on e-reserve)
 Isaac Newton, "Introduction" (in Janiak, pp. ix-xxxix)
 Isaac Newton, *Principia Mathematica*, Book III, Prop. VII (handout)
 Isaac Newton, *Principia Mathematica* (selections in Janiak, pp. 86-93)
 Isaac Newton, Correspondence with Bentley (in Janiak, pp. 94-105)
 G.W. Leibniz, *On Nature Itself* (e-reserve)
 Isaac Newton, Correspondence with Leibniz (in Janiak, pp. 106-117)
 G.W. Leibniz, *Against Barbaric Physics* (e-reserve)
 Isaac Newton, "An Account of the Book Entitled *Commercium Epistolicum*,"
 (in Janiak, pp. 123-126)

7. The Endgame: An Intellectual Conflict with Nationalist Undertones

Reading: Gregory Brown, "[...] *et je serais toujours la meme pour vous*: Personal, Political, and Philosophical Dimensions of the Leibniz-Caroline Correspondence" (e-reserve)
The Leibniz-Clarke Correspondence

Grading

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| One Major Paper | 30% |
| Midterm Examination | 20% |
| Comprehensive Final Examination | 30% |
| Quizzes/Homeworks | 10% |
| Class Participation | 10% |

Papers

There will be a major paper assignment. The purpose of the paper is to engage in detail with some philosophical argument from the texts, to engage an issue with more depth than we do in class, or to take an issue in a different direction than we do in class. Further information about the paper will be given in class and on the course web site. You will receive a paper topic long before the paper is due in order to give you the opportunity to work through rough drafts. I *strongly* encourage you to get started early on your paper.

Comprehensive Final Exam

There will be a comprehensive final examination during the last week of class. By "comprehensive," I mean that the final exam will cover **all** of the material in the course, from the Medieval Background to the Leibniz-Clarke correspondence. The exam will be as difficult or as easy as you make it: those who do not stay on top of the material during the course of the semester will do poorly on the exam, while those who stay on top of the material will do well. Obviously, the best way to prepare yourself for the final exam is to stay on top of the reading,

take notes on the reading, ask questions, participate in class discussions, etc. In other words, stay on top of the course material throughout the semester, and you will do well on the final exam.

Quizzes/Homeworks

There will be random, unannounced graded quizzes throughout the semester. Some of them will be in class, and others will be in the form of homework. The purpose of these quizzes and homework is to provide extra incentive to engage with the great texts we will be reading. Late homework will **not** be accepted, for that would defeat the purpose of the homework, which is to get you to think about the material for that day's discussion *before* the discussion takes place. (Thus, homework is due **in** class, and will not be accepted after class.) The quizzes could be in any of a variety of different formats (short answer, multiple choice, etc. — though homework will always be short essay). Provided that you stay on top of the reading, you should have no problem with the quizzes and homework. Indeed, provided you engage the readings, this should be an easy way to earn every bit of 10% of the course grade.

Attendance/Participation

We will be covering a lot of material in any one session. Therefore, attendance is **required**. If you know in advance that you will have to miss a class, please let me know about it. Note that class participation does constitute a significant portion of your course grade.

The course will involve lecturing by the instructor, as well as lively critical discussion in class. Students are expected to come to class having read *and thought about* the assigned material. You are strongly encouraged to actively participate in class discussions. I am aware that some people are a bit shy when it comes to speaking in class. If you are one of these people, please feel free to ask me questions over e-mail, during office hours, after class, etc. But an integral part of learning philosophy is the *active* exchange of ideas. I guarantee that *active* engagement with the material, and careful attention to the readings, will maximize your enjoyment of this course.

A Note on the Readings

You cannot read philosophy in the way that you might be used to reading a novel. Reading a philosophical text takes time and patience, and you must be willing to put in the effort. Our reading load for each class period is rather light for this very reason. The authors of the readings are not trying to be obscure. Rather, they are trying to be precise when dealing with matters that are deep and difficult. Reading philosophy is a skill that develops over time, and we will work on developing that skill in this course. I guarantee that for those willing to put in the effort, the rewards will be great.

Learning Outcomes

Students who complete this course can expect a) to have firm understanding of the historical, philosophical, and scientific development in the seventeenth century; b) to have gained the ability to engage difficult historical texts with a critical and contextual eye; c) to develop critical writing skills; d) to have an appreciation of other cultures, and the intellectual and social challenges that confronted them.