

Philosophy 128: Philosophy of Science

Spring, 1999

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Office hours WThF 11:00-2:00 and by appointment

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Course Syllabus

1. Course description. The philosophy of science is a branch of epistemology, the study of human knowledge and its justification. Scientific knowledge is conceived as that branch of human knowledge derived from the senses by means of the so-called "scientific method." The critical scrutiny of this method is the central task of the philosophy of science. This course begins with a review of the principles now considered part of the scientific method, and proceeds to canvass some theoretical grounds for scepticism regarding those principles. By far the longest segment of the course, however, is dedicated to the analysis of historical examples of scientific discovery. This analysis will tell us whether the scientific method, as we understand it, is really responsible for the success of modern science, or whether our understanding of the method demands correction.

This procedure will give us an opportunity to reflect on the respective positions of philosophy and science. Should we believe Francis Bacon when he calls philosophy "the mother of the sciences," or John Locke when he calls her a "handmaiden to the sciences"? I believe we will discover that here, as in the case of most false dilemmas, the truth lies somewhere in between. As we alternate between philosophical and historical readings, we'll see the extent to which philosophy and science need each other.

II. Readings.

The following texts are available in the University Bookstore:

Martin Curd and J.A. Cover, Philosophy of Science

Darwin, Charles, On the Origin of Species

Hume, David, An Enquiry Concerning Human Understanding

Kuhn, Thomas, The Copernican Revolution

Kuhn, Thomas, The Structure of Scientific Revolutions

Sklar, Lawrence, Space, Time, and Spacetime

Other readings will be made available either electronically, on the course web server, or be placed on library reserve. These include our first assignment for the semester, a selection from Rene Descartes' Discourse on Method. The locations of other texts not available in the bookstore will be announced as the semester progresses.

3. Assignments. There will be two short papers (25 points each), one long paper (30 points), and a take-home final (15points). In addition, contributions to in-class discussion, especially voluntary oral presentations, will be worth up to an additional 10 points. Final grades will be

assigned according to the traditional 100-point scale, where the theoretical maximum score is 105 points. Late papers will be penalized three points per day late, and all assignments, no matter how late, must be turned in by the last day of classes, Monday, May 3, in order for you to pass the course. Take-home exams will be assigned on the last day of classes, and are due in my box on 12:00 noon, May 10. No late exams will be accepted, under any circumstances.

I really hate to have to say this on the syllabus for such an advanced course, but sad experience has proved it necessary. The minimum sanction for any student found to have committed plagiarism on any assignment will be a failing grade for the entire course (not just the assignment). A report will also be made to the Dean of Students for possible further disciplinary action. If you are uncertain as to what constitutes plagiarism, please consult your Student Handbook (under the heading "Academic Dishonesty"), or come see me.

All students are encouraged to prepare oral presentations on topics of interest from the assigned course readings or related materials. Please come to see me at least a week in advance if you want to work on a presentation.

4. Schedule of Readings and Assignments

Readings are listed below on a weekly schedule; students should complete the readings for each week by the Monday of that week.

Week of:

Readings and Assignments:

Introduction

Jan. 13: Rene Descartes, Discourse on Method, part II (available in printable version at <http://guava.phil.lehigh.edu/philsoci/discourse.pdf>)

Jan. 18: David Hume, An Enquiry Concerning Human Understanding, Sections III-VII

The Copernican Revolution

Jan. 25: Kuhn, The Copernican Revolution, Ch. 1-3

Feb. 1: Kuhn, The Copernican Revolution, Ch. 4-7. Monday, Feb. 1: Special presentation, attendance mandatory.

Feb. 10: Kuhn, Structure of Scientific Revolutions. Feb. 8: No class (Pacing Break). **Feb. 10: First paper due!**

Feb. 15: Kuhn, Structure of Scientific Revolutions, continued. C&C, pp. 119-209.

The Darwinian Revolution

- Feb. 22: Ernst Mayr, “Darwin, Intellectual Revolutionary” (to be placed on reserve).
- Mar. 1: Charles Darwin, On the Origin of Species, Ch. 1-4.
- Mar. 15: Charles Darwin, On the Origin of Species, Ch. 5-9. **Mar. 15: Second paper due!**

The Emergence of Spacetime Concepts in Contemporary Physical Science

- Mar. 22: Lawrence Sklar, Space, Time, and Spacetime, selection TBA.
- Mar. 29: Lawrence Sklar, Space, Time, and Spacetime, selection TBA. Friday, Apr. 2: No class (Easter Break).
- Apr. 7: C&C, Ch. 3
- Apr. 12: C&C, Ch. 4.
- Apr. 19: C&C, Ch. 6.
- Apr. 26: C&C, Ch. 7
- May 3: **Final paper due. Take-home exams will be assigned, to be turned in to the instructor’s box no later than 12:00 noon, Monday, May 10.**

That’s it. Have a great Summer!