

## Philosophy of Science Syllabus Spring 2012

### Course Description

In this course, we will examine the recent history of philosophical perspectives on scientific inquiry. We will begin at the turn of the twentieth century with logical positivism, a view that attempted to employ newly available logical methods to justify scientific practice. By rationally reconstructing scientific theories to expose their logical dependence upon observable phenomena, the positivists hoped to explain the authority of science. But does such rational reconstruction elide explanations of how one scientific theory develops from another? In the second unit, we will examine how post-positivistic philosophers attended to the *history* of science, rejecting a common, purely logical basis upon which scientists theorize as a distorting fiction. Instead, perhaps the kinds of knowledge and methods between scientific ages are so different as to constitute entirely different worldviews. In the last three units, we will discuss recent challenges to scientific paradigms. We will ask such questions as: Can philosophy of science treat all sciences together, or do different branches of science require different philosophical approaches? Are scientific theories and methods subject to social and political critique (e.g., by feminism)? And are there unique philosophical methods for evaluating science, or is philosophical inquiry continuous with scientific inquiry?

By the end of this course, you will have developed an understanding of the modern history of the philosophy of science, and, more generally, you will be introduced to the work of philosophical analysis. You will develop your discussion and oral presentation skills, and will write a number of papers in which you will create your own philosophical arguments to provide a clear and consistent defense of your views on such topics as explanation, causation, and laws.

### Grading

You will complete a number of assignments during the semester. Each short response paper will be worth **5%** of your final grade, thus all twelve will total **60%**. The final term paper will be worth **30%** of your final grade. The in-class presentation and participation over the course will be worth **10%** of your final grade.

### Participation

Merely attending class does not constitute participation. To participate is to arrive at class punctually and to regularly contribute to collegiate discussion. I shall be closely monitoring your participation in class throughout the semester. Periodically, you will be asked to complete discussion self-evaluation sheets based on your performance in class, which I shall review at the end of the semester.

You are also encouraged to use the online discussion board, available through Moodle, to talk about the readings and classroom discussions with other students. Individual posts will not be graded, but I will take your contribution to the forum into consideration.

At the start of the semester, each of you will also be expected to sign up for a presentation. You will prepare a ten minute introduction to the reading you present, briefly summarizing what you consider to be its focus, and highlighting issues it raised that you found particularly interesting, confusing or challenging. You will then field questions about the reading from the class. You will

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be expected to make significant contributions to the class discussion concerning the article which you present. Your presentation will be evaluated as part of this component of your final grade.

### Papers

At the beginning of each Thursday class, you will have the opportunity to turn in a response paper based on *that week's* reading. You should write about an issue or an argument which has particularly interested or confused you, and endeavor to practice different philosophical skills over the semester (exegesis, anticipation of objection, counterarguments, etc.). You must turn in at least *twelve* of the fourteen possible papers. (If you hand in thirteen or fourteen papers, I will drop your lowest grades at the end of the semester.) You should submit a hard copy to me in class, and also submit an electronic copy to turnitin.com through moodle.

At the end of the course I shall expect your term paper to be turned in. This longer paper will give you an opportunity to explore in detail a part of the course which has particularly interested you. You will be expected to book an appointment with me to discuss your plan for the final paper in Week 14. You will also have a chance to turn in a draft of your paper on, or before, Monday May 1. Your final paper must be submitted to turnitin.com through Moodle. You are required to submit all of your papers to this online provider in addition to submitting a hard copy to me. The hard copy should be slipped under the door of my office, and the electronic copy submitted, by noon Monday May 7.

Unexcused late papers will be penalized a full letter grade for each day or part of a day overdue. Missing papers will be weighted at 0%.

### How To Do Well In This Course

Turn off your cell phone in class. Come to class prepared. Being prepared means that you have completed the assigned readings, thought carefully about them, and have begun to formulate questions concerning the issues they raise. Participate actively in class; ask questions in our discussions, and respond to each other's questions. These class experiences, in which you will have to clearly explain yourselves to each other, will be invaluable when you come to complete your written assignments. I expect a high level of argumentative clarity in your papers, which means you should anticipate, articulate and respond to objections that your reader might have to your view.

### Textbooks

Balashov, Yuri, and Alex Rosenberg. *Philosophy of Science: Contemporary Readings*. London and New York: Routledge, 2002. (Referred to in Reading Schedule as "CR.")

Machamer, Peter, and Michael Silberstein. *The Blackwell Guide to The Philosophy of Science*. Oxford: Blackwell, 2002. (Referred to in Reading Schedule as "BG.")

Additional readings will be made available online through Moodle, or will be on reserve in Curry Library. You are expected to print your own copy of each assigned paper and bring it with you to class.

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### Class Reading Schedule

#### Week 1: Introduction

1. Tuesday Jan 17 Distribution of Syllabus
2. Thursday Jan 19 Moritz Schlick. "The Future of Philosophy." CR, pp. 8-21.  
Peter Machamer. "A Brief Historical Introduction to the Philosophy of Science." BG, chapter 1.

### Unit 1: Logical Positivism

#### Week 2: Meaning

3. Tuesday Jan 24 A.J. Ayer. Selections from *Language, Truth, and Logic*. (Moodle.)  
Rudolf Carnap. "Empiricism, Semantics, and Ontology." (Moodle.)
4. Thursday Jan 26 W.V. Quine. "Two Dogmas of Empiricism." CR, pp.340-361.

#### Week 3: Explanation

5. Tuesday Jan 31 Carl Hempel. "Two Models of Scientific Explanation." CR, pp. 45-55.
6. Thursday Feb 2 Jim Woodward. "Explanation." BG, chapter 3.

#### Week 4: Critics

7. Tuesday Feb 7 Carl Craver. "Structures of Scientific Theories." BG, chapter 4.
8. Thursday Feb 9 Karl Popper. "Science: Conjectures and Refutations." CR, pp.294-301.

### Unit 2: Taking History Seriously

#### Week 5: Kuhn

9. Tuesday Feb 14 Thomas Kuhn. Selections from *The Structure of Scientific Revolutions*. (Moodle.)
10. Thursday Feb 16 Thomas Kuhn. "Objectivity, Value Judgment, and Theory Choice." CR, pp. 421-437.

#### Week 6: Lakatos

11. Tuesday Feb 21 Imre Lakatos. "Falsification and the Methodology of Scientific Research Programs." (Moodle.)
12. Thursday Feb 23 Imre Lakatos. "History of Science and Its Rational Reconstructions." (Moodle.)  
Frederick Suppe. Selections from *The Structure of Scientific Theories*. (Moodle.)

#### Week 7: Feyerabend

13. Tuesday Feb 28 Paul Feyerabend. "Explanation, Reduction, and Empiricism." CR, pp. 141-162.  
Paul Feyerabend. Selections from *Against Method*. (Moodle.)



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Week 15: Critics

29. Tuesday May 1

Peter Godfrey-Smith. "Naturalistic Philosophy in Theory and Practice." (Moodle.)

30. Thursday May 3

Laurence Bonjour. "Against Naturalized Epistemology." (Moodle.)

**Monday May 7, noon:**

**TERM PAPER DUE**