PHILOSOPHY 8: INTRODUCTION TO PHILOSOPHY OF SCIENCE
MWF 10:00-10:50, Rolfe Hall 1200

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Course Description

Science has an impressive record of producing detailed knowledge about many aspects of the natural world. This success naturally leads to a number of philosophical questions: is there something distinctive about the scientific method? What is the nature of this method, and of scientific theories in general? In the first part of this course, we will consider aspects of the "standard view" of the nature of science prevalent in the mid 20^{th} century. This view attributes logical structure to scientific theories, and uses this as a basis for accounts of how theory choice and confirmation ought to proceed. Next we will turn to the historicist challenge: Kuhn and others rejected the standard view, emphasizing instead sharp discontinuities in scientific thought and the importance of social and cultural factors in theory choice. The third and final portion of the course considers modern debates regarding scientific realism. Do theories give literally true descriptions of the world, or should a theory's elaborate machinery be regarded only as a useful tool? The course will include non-technical discussions of scientific theories and episodes from the history of science, but the overall focus is on philosophical debates regarding the nature of science.

Evaluation

1. Participation and Reading Questions (20 %): Participation in the discussion sections (10 %); short answers (about 200-250 words) to a question regarding the reading assignments (roughly six over the course of the quarter, 10 %). Students will receive credit for turning in these assignments, but they will not be graded.
2. Papers (45 %): two short papers (4-6 pages typed, double-spaced, in a reasonable font; 20 % for the first paper and 25 % for the second). Topics and additional guidelines will be distributed well in advance of the due dates. The paper should clearly state and argue for a thesis; a mere summary of existing literature or lecture notes will not be rewarded. Students are encouraged to consult with their TA while preparing the papers. *Policy on Late Papers*: Extensions will be granted at the TA's discretion for serious emergencies (such as medical emergencies, but not including computer problems and so on). Late papers will be docked one step (e.g., from a $B+$ to a B) for each day past the deadline.
3. Exam: Final exam (35 %) on March 22. The exam is cumulative; I will discuss the exam format in more detail later in the course.

Required Texts

Peter Godfrey-Smith, *Theory and Reality*, U Chicago Press.
Thomas S. Kuhn, *The Structure of Scientific Revolutions*, U Chicago Press. 3^{rd} edition (1996).
Course Reader. Collection of articles, available at Course Reader materials.

TENTATIVE SCHEDULE

Date	Topic	Assigned Reading
Jan. 7	Introduction and Overview	
10	Demarcating and Defining Science	GS 1, CR 1
	Induction and Scientific Method	
12	Theory Testing	CR 2, GS 2
14	*continued*	
17	*Holiday: MLK's Birthday*	
19	Problem of Induction	GS 3, CR 2
21	Confirmation	CR 2
24	Underdetermination	CR 3
26	Popperian Falsification	CR 4, GS 4
28	*continued*	
	The Historical Turn and Responses	
31	Kuhn: Normal Science	K 1-2 GS 5
Feb. 2	*continued*	K 3-5
4	Kuhn: Revolutions	K 6-8, GS 6
7	*continued*	K 9-10, 12-13
9	Revolutions Reconsidered	K Postscript
11	*continued*	CR 5
14	Theory Change and Progress	GS 7
16	*continued*	
18	Sociological Turn	GS 8
21	*Holiday: Presidents' Day*	
23	Naturalism	GS 10-11
25	*continued*	
	Realism	
28	Theoretical Entities	CR 6
March 2	Scientific Realism and Empiricism	GS 12
4	*continued*	CR 7
7	*continued*	
9	Experiment Reconsidered	
11	Confirmation Reconsidered	GS 14
14	Realism in Modern Physics	CR 8
16	Overview and Conclusion	

Note: "CR #" refers to article number # in the course reader, listed on the next page; GS = Godfrey-Smith, K = Kuhn (numbers refer to chapters).

ASSIGNMENTS

Feb. 4	First Paper Due
Mar. 4	Second Paper Due
Mar. 22	Final Exam: 11:30 - 2:30

Texts on Reserve

Bird, *Philosophy of Science*.
Boyd, Gasper, & Trout (eds.), *The Philosophy of Science*.
Curd & Cover (eds.), *Philosophy of Science: The Central Issues*.
Duhem, *The Aim and Structure of Physical Theory*.
Hacking, *Representing and Intervening*, and *Scientific Revolutions*.
Kuhn, *The Copernican Revolution*.
Salmon et al., *Introduction to the Philosophy of Science*.
van Fraassen, *The Scientific Image*.

Course Reader Contents

1. Laudan - Ruse exchange: "Commentary: Science at the Bar—Causes for Concern," Larry Laudan, and "Response to the Commentary: *Pro Judice*" Michael Ruse. In *Science Technology and Human Values* **7** (1982): 16-23.
2. Selections from Hempel, *Philosophy of Natural Science*.
3. "Physical Theory and Experiment," Pierre Duhem. From *Aim and Structure of Physical Theory*, Princeton University Press, pp. 180-218.
4. "Philosophy of Science: A Personal Report," Karl Popper. From *British Philosophy at Mid-Century*, C. Mace (ed.), 1957.
5. "The Structure of Scientific Revolutions," by Dudley Shapere. In *Philosophical Review* **73** (1964), pp. 383-397.
6. Selections from Alexander Bird, *Philosophy of Science* (1998).
7. Selections from *The Scientific Image*, Bas van Fraassen, pp. 6-40.
8. "Quantum Mysteries for Anyone," N. David Mermin. *Journal of Philosophy* **78** (1981), pp. 397-408.

Webpage

Check the course webpage at ecampus.humnet.ucla.edu for handouts, schedule updates, supplementary readings, links to useful websites, and other course materials. The first selection from the course reader is available online, and there may be additional required readings posted online later in the quarter.