

PHIL/HPS 581 Philosophy of Science  
TTh 2:00-3:15  
114 Pasquerilla Center

Fall 2004

Prof. Don Howard  
308 Malloy  
Tel: 631-7547/-5015  
Don.A.Howard.43@nd.edu  
Office Hours: TTh 1:00-2:00

### ***Required Texts:***

Thomas S. Kuhn, *The Structure of Scientific Revolutions*, 3rd ed. (Chicago: University of Chicago Press, 1996).

All other readings are contained in a course packet that can be purchased at the Copy Shop in LaFortune Student Center.

***Course Requirements:*** There will be a mid-term and a final examination, each an in-class, essay examination worth 25% of your final grade. A term paper (minimum 15 pages) will be worth 40% of your final grade. The remaining 10% of your grade will be based on class participation.

***One-minute Papers:*** At the end of every class session, we will stop a minute or two early, so as to give you the opportunity to write “one-minute papers.” These will be ungraded, but required of every student at the end of every class. Normally no more than two paragraphs long, these one-minute papers must contain answers to two questions: (1) What was the most important issue addressed in today’s class? (2) What issue remains most unclear in your mind at the end of today’s class?

### ***Schedule:***

#### ***Date: Topic:***

#### ***Readings:***

Aug. 24 Introduction to the Course

Aug. 26 The General Historical  
Background

Philipp Frank, “Introduction: Historical Background”

Aug. 31 Mach and Positivism

Ernst Mach, “Introductory Remarks: Antimetaphysical” and  
“The Guiding Principles of My Scientific Theory of  
Knowledge and Its Reception by My Contemporaries”

Sep. 2 Conventionalism

Henri Poincaré, “Experiment and Geometry”; Pierre Duhem,  
“Physical Theory and Experiment”

Sep. 7 Neo-Kantianism

Alan Richardson, “The Background to Early Carnap:  
Themes from Kant” and “The Fundamentals of Neo-Kantian  
Epistemology”

Sep. 9 Logicism and Formalism

Rudolf Carnap, “The Logicist Foundations of Mathematics”;  
John von Neumann, “The Formalist Foundations of  
Mathematics”

---

Sep. 14	Schlick, Reichenbach, and Carnap before the Vienna Circle	Moritz Schlick, "Critical or Empiricist Interpretation of Modern Physics?"
Sep. 16	The Founding of the Vienna Circle	Otto Neurath et al., "The Scientific Conception of the World: The Vienna Circle"; Moritz Schlick, "The Turning Point in Philosophy" and "The Future of Philosophy"
Sep. 21	The Protocol-Sentence Debate	Rudolf Carnap, "Protocol Statements and the Formal Mode of Speech"; Otto Neurath, "Protocol Statements"; Moritz Schlick, "On the Foundation of Knowledge"
Sep. 23	Verificationism and Falsificationism	Rudolf Carnap, "The Elimination of Metaphysics through Logical Analysis of Language"; Carl G. Hempel, "The Empiricist Criterion of Meaning"; Karl Popper, "Science: Conjectures and Refutations"
Sep. 28	The Left Wing of the Vienna Circle	Marx Wartofsky, "Positivism and Politics: The Vienna Circle as a Social Movement"; Otto Neurath, "Sociology in the Framework of Positivism"
Sep. 30	Philosophy as Logical Syntax	Michael Friedman, "Analytic Truth in Carnap's <i>Logical Syntax of Language</i> "; Rudolf Carnap, "Empiricism, Semantics, and Ontology"
Oct. 5	Explanation	Ernest Nagel, "The Deductive Pattern of Explanation"; Carl G. Hempel, "Inductive-Statistical Explanation"
Oct. 7	The Nature of Scientific Laws	Ernest Nagel, "The Logical Character of Scientific Laws"; Fred I. Dretske, "Laws of Nature"
Oct. 12	Theories of Confirmation	Carl G. Hempel, "Studies in the Logic of Confirmation"
Oct. 14	<b><i>Mid-term Examination</i></b>	
<b><i>Fall Break, 18-22 October</i></b>		
Oct. 26	The New Riddle of Induction	Nelson Goodman, "The New Riddle of Induction"
Oct. 28	Dewey, Quine, and Epistemological Naturalism	W.V.O. Quine, "Two Dogmas of Empiricism," "Epistemology Naturalized"
Nov. 2	Kuhn and the New Historicism	Thomas S. Kuhn, <i>The Structure of Scientific Revolutions</i> , Chs. 1-5
Nov. 4	"	Thomas S. Kuhn, <i>The Structure of Scientific Revolutions</i> , Chs. 6-13

---

Nov. 9	The Reaction to Kuhn	Stephen Toulmin, “Does the Distinction between Normal and Revolutionary Science Hold Water?”; Karl Popper, “The Rationality of Scientific Revolutions”
Nov. 11	Kuhn’s Response	Thomas S. Kuhn, “Logic of Discovery or Psychology of Research” and “Postscript—1969”
Nov. 16	The Observational/Theoretical Distinction	Carl G. Hempel, “The Theoretician’s Dilemma”; Grover Maxwell, “The Ontological Status of Theoretical Entities”
Nov. 18	Scientific Realism	Ernan McMullin, “A Case for Scientific Realism”; Ian Hacking, “Experimentation and Realism”
Nov. 23	Constructive Empiricism	Bas C. van Fraassen, “Arguments Concerning Scientific Realism” and “To Save the Phenomena”
Nov. 25	<b><i>Thanksgiving Holiday</i></b>	
Nov. 30	The Natural Ontological Attitude	Arthur Fine, “The Natural Ontological Attitude” and “And Not Anti-realism Either”
Dec. 2	Social Constructivism	David Bloor, “The Strong Programme in the Sociology of Knowledge”
Dec. 7	Feminist Philosophy of Science	Evelyn Fox Keller, “Feminism and Science”; Helen E. Longino, “Can There Be a Feminist Science?”

***Exam Week, 13-17 December***Dec. 13 ***Term Paper Due***Dec. 16 ***Final Examination 10:30 am***