

PHL 390: Philosophy of Science
Fall 2019

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Office: Anspach 242
Office Hours: MW 9:30–11:00,
and by appt.

Course Description: This course will examine some of the central issues in the philosophy of science. Topics will include the demarcation between science and “pseudo-science”, the nature of scientific explanation and laws, the problems of underdetermination and induction, the possibility of intertheoretic reduction, realism and anti-realism, and questions about rationality and objectivity in scientific practice. Readings will be primarily from the 20th century. Requirements will include regular short writing assignments, one mid-term exam, one final exam, and two essays.

Required Texts:

1. Curd, Cover, and Pincock. *Philosophy of Science: The Central Issues*, 2nd ed. New York: Norton: 2013.
2. Other readings will be posted to Blackboard (indicated in the schedule below with ‘BB’).

Requirements:

1. Reading responses: 10%
2. Mid-term exam: 20%
3. First paper: 20%
4. Second paper: 25%
5. Final exam: 25%.

Academic Integrity: Cheating, plagiarism, and other forms of academic dishonesty will be dealt with in accordance with CMU’s Policy on Academic Integrity, which can be found at: http://academicsenate.cmich.edu/NonCad/ACADEMIC_INTEGRITY_POLICY.pdf.

Accommodations for students with disabilities: CMU provides students with disabilities reasonable accommodation to participate in educational programs, activities, or services. Students with disabilities requiring accommodations to participate in class activities or meet course requirements should first register with the office of Student Disability Services (Park Library 120, telephone 989-774-3018, TDD #2568), and then contact the professor as soon as possible.

Electronics: You are welcome to take notes on a laptop or tablet, but if you choose to do so you must sit in the very back row of the classroom. Please refrain from using cell phones during class.

Tentative Schedule:

I. Science and Pseudo-Science

Date:	Reading:
8/26	• Introduction (no reading)
8/28	• Popper, "Science: Conjectures and Refutations" ; • Kuhn, "Logic of Discovery or Psychology of Research?"
9/2	• No Class: Labor Day
9/4	• Lakatos, "Science and Pseudoscience" ; • Thagard, "Why Astrology is a Pseudoscience"

II. Explanation and Laws

Date:	Reading:
9/9	• Hempel, "Two Basic Types of Scientific Explanation" ; • Hempel, "The Thesis of Structural Identity"
9/11	• Railton, "A Deductive-Nomological Model of Probabilistic Explanation"
9/16	• Kitcher, "Explanatory Unification"
9/18	• Ayer, "What is a Law of Nature?"
9/23	• Dretske, "Laws of Nature"
9/25	• Cartwright, "Do the Laws of Physics State the Facts?"

III. Intertheoretic Reduction

Date:	Reading:
9/30	• Nagel, "Issues in the Logic of Reductive Explanations"
10/2	• Feyerabend, "How to be a Good Empiricist"
10/7	• Fodor, "Special Sciences"
10/9	• REVIEW

IV. Underdetermination, Confirmation, and Induction

Date:	Reading:
10/14	• Duhem, "Physical Theory and Experiment"
10/16	• Quine, "Two Dogmas of Empiricism"
10/21	• Lipton, "Induction"
10/23	• Hempel, "Criteria of Confirmation and Acceptability"
10/28	• Achinstein, "Explanation v. Prediction"
10/30	• Goodman, "The New Riddle of Induction" [BB]

V. Realism

Date:	Reading:
11/4	• Maxwell, "The Ontological Status of Theoretical Entities"
11/6	• van Fraassen, "Arguments Concerning Scientific Realism"
11/11	• Musgrave, "Realism vs. Constructive Empiricism"
11/13	• Fine, "The Natural Ontological Attitude"

VI. Rationality and Objectivity

Date:	Reading:
11/18	• Kuhn, "The Nature and Necessity of Scientific Revolutions"
11/20	• McMullin, "Rationality and Paradigm Change in Science"
11/25	• Longino, "Values and Objectivity"
11/27	• TBA
12/2	• Okruhlik, "Gender and the Biological Sciences"
12/4	• REVIEW
12/11	• FINAL EXAM [2:00 PM]