

Introduction to Philosophy of Science

Class schedule:---

Class Instructor: Katherine Valde

Office hours: ---

Class Location: ---

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Office Location: ---

Course Description:

This course will introduce students to some of the main themes of the philosophy of science. We will consider such questions as, what is science?, Is science a unified project?, How does science generate knowledge?, How do scientific theories change?, and How do values interact with science? Students can expect to gain not only training in philosophical history and argumentation, but also the resources needed for assessing difficult questions that we routinely face in our interaction with sciences or as scientist. No particular background knowledge of philosophy or science is presupposed, but some experience in writing and thinking philosophically and/or theoretically would be helpful.

Required Texts:

Philosophy of Science: A New introduction by Gillian Barker and Philip Kitcher (2014)

The Structure of Scientific Revolutions by Thomas Khun

All other readings will be provided via PDF.

Schedule of Readings:

Week 1: What is Science?

- Gillian Barker and Philip Kitcher “Philosophy of Science: A New introduction” – Ch. 1 &2
- Alan Chalmers “What is This Thing Called Science?” – Introduction, and Ch. 1 & 2

Week 2: Reductionism and the Unity of Science

- Gillian Barker and Philip Kitcher “Philosophy of Science: A New introduction” – Ch. 3
- Paul Oppenheim and Hilary Putnam “Unity of Science as a Working Hypothesis”
- Thomas Nickles “Two Concepts of Intertheoretic Reduction”

Week 3: Pluralism and the Disunity of Science

- John Dupré “Metaphysical Disorder and Scientific Disunity”
- Nancy Cartwright “Fundamentalism vs. Patchwork of Laws”
- Sandra Mitchell “Integrative Pluralism”

Week 4: Falsificationism

- Karl Popper selections from “The Logic of Scientific Discovery”
- Karl Popper selections from “Conjectures and Refutations”
- Imre Lakatos “Falsification and Methodology of Scientific Research Programs”

Week 5: Underdetermination

- Pierre Duhem “Physical Theory and Experiment”
- W. V. Quine “Two Dogmas of Empiricism”

Week 6-7: Theory Change

- Gillian Barker and Philip Kitcher “Philosophy of Science: A New introduction” – Ch. 4
- Thomas Khun “The Structure of Scientific Revolutions”

Week 8: Scientific Explanation

- Carl Hempel “Two Basic Types of Scientific Explanation”
- James Woodward “The Manipulability Conception of Causal Explanation”
- Peter K. Machamer, Lindley Darden & Carl F. Craver “Thinking About Mechanisms”

Week 9: Gender and Science

- Gillian Barker and Philip Kitcher “Philosophy of Science: A New introduction” – Ch. 5
- Kathleen Okruhlik “Gender and the Biological Sciences”
- Janet Kourany “A New Program for Philosophy of Science, in Many Voices”

Week 10: Science and Values

- Gillian Barker and Philip Kitcher “Philosophy of Science: A New introduction” – Ch. 6
- Helen E. Longino “Values and Objectivity”
- Naomi Oreskes and Erik Conway “Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming” – Introduction and Ch. 1

Week 11: Survey Dependent *Topics for this week will be chosen based on results of a student survey.*

Week 12: Survey Dependent *Topics for this week will be chosen based on results of a student survey.*

Alternative modules:**Science Communication:**

- Stephen John “Epistemic trust and the ethics of science communication: against transparency, openness, sincerity and honesty”
- Carol Rogers “Making the audience a key participant in the science communication process”
- Fabien Medvecky “Fairness in Knowing: Science Communication and Epistemic Justice”

Science and Politics:

- Naomi Oreskes and Erik Conway “Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming”

Idealizations and Metaphor in Science:

- Ernan McMullin “Galilean Idealization”
- William Wimsatt “False Models as Means to Truer Theories”
- Roman Frigg “Models and Fiction”