

Philosophy of Science

[Sample Syllabus: Suitable for 300-level undergraduate course with 15-20 students]

Professor Information

Email Address: finestone@chapman.edu
Office Hours: W 2:00-4:00 PM
Office Location: Wilkinson Hall 221

Class Information

Class Time: MW 12:30-2:00 PM
Class Location: Wilkinson Hall 230

Course Description: This is a survey course covering many of the classic topics in the philosophy of science such as the demarcation between science and pseudoscience, how scientific theories are confirmed by evidence, whether the sciences can be reduced to fundamental physics, and to what extent science provides us with objective truths. The aim of this course is to help students apprehend the philosophical dimension of scientific research, connecting abstract reasoning with concrete practices. We will be reading philosophers from the twentieth and twenty-first centuries as well as scientific research from the early modern period through to the present.

Learning Goals:

- Students will gain familiarity with concepts, views, and debates relating to scientific inquiry as well as the social organization of scientific organizations.
- Students will critically and charitably engage with primary sources.
- Students will gain improved proficiency in analytical writing, oral communication, and independent research.

Texts:

- Curd, M., Cover, J., & Pincock, C. (eds.). 2012. *Philosophy of Science: The Central Issues*. Norton.
- Kuhn, T. 1970. *The Structure of Scientific Revolutions*. University of Chicago Press.

All other texts will be made available via Canvas. The schedule below is subject to change. In the event of changes, I will send a class-wide email and announcement on Canvas.

Course Requirements:

- **Participation (10%):** Participation in class discussions will be assessed on (1) grasp of and depth of reflection on the assigned readings; and (2) ability to

attentively listen and charitably respond to other students' comments and questions. Consistent and constructive participation will weigh in favor of the higher grade in the case of a borderline final grade based on your work.

- **Discussion Questions (10%):** For every reading you will be responsible for crafting a discussion question regarding some aspect of the reading which you found to be confusing, disconcerting, provocative, or simply worth discussing in greater detail. Discussion questions will be submitted *before* the start of class and be used to organize discussions.
- **Writing (20%; 35%):** During the semester, you will be responsible for completing a short essay pertaining to each of the thematic topics. These **topic essays** must be written in response to one of the assigned prompts and critically engage with the primary literature. In addition, each essay must also provide an explanation for *why* you choose that specific prompt rather than the alternatives provided. You will also be responsible for completing a semester-long **research paper**. To complete the research paper, you will need to complete (1) the verbal topic discussion, (2) the research proposal, and (3) the term paper. More details pertaining to all writing assignments can be found on the *Writing Handout*.
- **Presentation and Commentary (15%; 10%):** Before starting to write the term paper, each student is required to present their research to the class and to provide commentary on another students' presentation. Presentations will last 10 minutes and should involve either a visual presentation or a handout, followed by 5 minutes for commentary. More details can be found on the *Presentation Handout*.

Course Arrangements:

- **Revise and Resubmit:** I will provide extensive and actionable comments – critical and constructive – to all papers you hand in. The expectation is that you can make use of these comments to improve both your arguments as well as your general writing. For the topic essays, you are encouraged to revise and polish the papers once in order to strengthen the paper and receive a better grade. For the term paper, you are encouraged to revise and resubmit the paper up to three times. Good writing and good thinking require time, persistence, and multiple perspectives. If your initial grade is disappointing, take the time to rethink your argument, explore additional texts, and refine your writing. All rewritten work will be held at the same standard and grading scale as initial submissions.
- **Topical Discussion:** We will start every class with a pre-class mini discussion regarding current events, specifically with regard to news stories which relate to our current discussions. For example, if there has been an alleged “medical breakthrough” or if there has been research scandal, we will see if we can connect up our philosophical reflection with real-world concerns and events.

- **Extended Office Hours:** In addition to the regular office hours, I will offer extended office hours two weeks prior to the deadline for the term paper so as to help you wrestle with your research topics, discuss writing strategies, and provide feedback.

Grading Scale

A+: 95% and up; A: 93-95%; A-: 90-92%; B+: 87-89%; B: 83-86%; B-: 80-82%; C+: 77-79%; C: 73-76%; C-: 70-72%....

Academic Integrity

Cheating and plagiarism will not be tolerated. Students suspected of violating the Chapman Academic Integrity Policy will be required to participate in the outlined procedures. For concerns with AI writing aids, see the *AI Policy Handout*.

Disability Resources

If you have a disability that requires special accommodation you should contact the Chapman Disability Services at ds@chapman.edu as soon as possible.

Schedule:

Class 1	Introduction: what is science and where does philosophy come into it? No reading
Class 2	Demarcation Popper, "Science and Conjectures"
Class 3	Leibniz and Clarke, "Correspondence"
Class 4	Leibniz and Clarke, "Correspondence"
Class 5	Lakatos, "Science and Pseudoscience"
Class 6	Inference Hempel, "Two Basic Types of Structural Explanation"
Class 7	Hempel, "Two Basic Types of Structural Explanation"
Class 8	Newton, "Rules of Reasoning"
Class 9	Newton, "General Scholium"
Class 10	Du Chatelet, "Of Hypotheses"
Class 11	Gillies, "The Duhem Thesis and the Quine Thesis"
Class 12	Achinstein, "Explanation v. Prediction"
Class 13	Nagel, "Issues in the Logic of Reductive Explanations"
Class 14	Progress Writing Workshop
Class 15	Kuhn, "Structures of Scientific Revolutions" Chapters I-V
Class 16	Kuhn, "Structures of Scientific Revolutions" Chapters VI-IX
Class 17	Kuhn, "Structures of Scientific Revolutions" Chapters X-XIII
Class 18	Kuhn, "Structures of Scientific Revolutions" Postscript

Class 19	Realism Laudan, "A Confutation of Convergent Realism"
Class 20	Massimi, "Perspectival Realism" Chapter III
Class 21	Longino, "Values and Objectivity"
Class 22	Douglas, "Inductive Risk and Values in Science"
Class 23	Oreskes & Conway, "Merchants of Doubt" Chapter V
Class 24	Weatherall & O'Conner, "How to Beat Science and Influence People"
Class 25	Student Project Presentations
Class 26	Student Project Presentations
Class 27	Student Project Presentations
Class 28	Student Project Presentations