

Philosophy of Science

Mondays and Tuesdays, 9:50–12:15

Teaching Building 6, Room 306 (on Monday)
and Teaching Building 6, Room 103 (on Tuesdays)

Peter Finocchiaro

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This course will be conducted online.

As of the beginning of the semester, I am still in America. I do not know when I will be able to return to Wuhan. It is very likely that I will not be able to return before the semester is over. However, if I am able to return, then we will transition this course into a regular in-person course. I will keep you updated as the semester progresses.

In the meantime, this course will be conducted online. The format will be as follows. I will upload lecture videos to the QQ group. In some of these videos, I will give you activities to complete. **While you do not need to watch these videos and complete these activities at a specific time of the week, you do need to do so on the week that the lecture is scheduled.** In addition, I will encourage group discussions in the QQ group as well as one-on-one conversations between me and each student (QQ, WeChat, email, etc.).

Course Description:

Neil deGrasse Tyson has said that philosophers are not “productive contributor[s] to our understanding of the natural world.” Stephen Hawking has said that “philosophy is dead,” because “[p]hilosophers have not kept up with modern developments in science.” And Lawrence Krauss has even said that “. . . the worst part of philosophy is the philosophy of science. . . [i]t has no impact on physics what so ever, and I doubt that other philosophers read it.”

Harsh words from three of the most popular physicists today! But are they right? Our central goal in this class is to find out. We will seek to understand how – if at all – philosophy is relevant to scientific practice. We will do so in two ways. First, we will explore some “classic” debates in the philosophy of science concerning the foundational epistemology, metaphysics, and ethics of science. Second, we will explore some “new” debates that focus on more specific topics within the philosophy of science. Such topics include the evolution of human morality, the epistemology of extraterrestrial life, and the “scientific creation” of sexual orientation.

Required Text: *Theory and Reality: An Introduction to the Philosophy of Science*, by Peter Godfrey-Smith

I will provide pdf files of all course material, including the text mentioned above.

Optional Texts: In addition to the above required material, you may also consider acquiring the following supplementary material:

- *Philosophy of Science: A Contemporary Introduction* (Second Edition), by Alex Rosenberg
- *Philosophy of Science: Contemporary Readings*, edited by Alex Rosenberg and Yuri Balashov
- *Philosophy of Social Science* (Third Edition), by Alex Rosenberg
- *The Structure of Scientific Revolutions* (Third Edition), by Thomas Kuhn

These texts can serve as useful background for our class discussions. (I will provide pdf files of these texts if you send me a picture of a cute cat.)

A note about the reading: For each lecture, I will cover specific aspects of the reading assigned for that day. That being said, we are free to explore whatever issue come to mind, even if I do not cover it in one of my lectures. Therefore, you should read *all* of the assigned material.

Letter Grade Distribution: In this course I will use the following scale to convert between numerical and letter grades:

96.00 - 100.00	A+	70.00 - 74.99	B-
90.00 - 95.99	A	67.00 - 69.99	C+
85.00 - 89.99	A-	63.00 - 66.99	C
80.00 - 84.99	B+	60.00 - 62.99	C-
75.00 - 79.99	B	00.00 - 59.99	D

Grade Distribution: The overall grade is determined by the following:

Activities	15%
Debriefs	15%
Midterm	30%
Paper	40%

Course Goals:

As I said above, our central goal is to determine how philosophy is relevant to scientific practice. In service to that goal, I offer the following three smaller goals:

- (a) to gain familiarity with “classic” debates in the philosophy of science, including the motivations for the debates, the prominent positions taken in those debates, and the arguments for or against those positions;
- (b) to explore the areas where contemporary science and philosophy intersect, and the ways in which they attempt to address one another;
- (c) to improve your ability to articulate why you think the above points are relevant to scientific practice (or why you think they are not)

Assignments

Activities: Every week, I will give you a few activities to complete. These activities will focus on the concepts and arguments that we are discussing during that week. I encourage you to work on these activities in small groups (2–3 students). I will grade these activities on a “✓- / ✓ / ✓+ ” scale.

These activities are intended to be low-stakes opportunities for you to cultivate your ability to communicate ideas through writing. This ability will be important for both the midterm and the term paper.

Debriefs: For every lecture, you will write a short ungraded “debrief” about that lecture. In your debrief, you will answer two questions: (1) what part of the material did you find the most interesting? (2) what part of the material did you find unclear or would like clarification on? You will share these debriefs in the class QQ group. I will then use the debriefs to identify topics that we can discuss together (either because many people in the class find the topic interesting or because many people in the class would like clarification).

Midterm: After we finish Unit 1, you will complete a take-home midterm exam. The exam will consist of 5 essay questions. These questions will be complex, requiring you to accurately explain key concepts, apply them to the relevant philosophical issues, and articulate your own beliefs about those issues. Because the exam is take-home, you can consult your notes and the reading material. You *can* study together before the exam, **but you must work on your exams separately.**

Paper: You will write one paper for this course. This paper should be argumentative in style and attempt to show a significant connection between philosophy and science. Such a paper might, for example, defend the “theory-laden” thesis about scientific observations. You may choose their own topic

or they may choose to have a topic assigned by me. **No matter what topic you write on, you must first get my approval through an email or a face-to-face meeting.**

Reading List and Schedule:

Below is a tentative schedule of the material that we will cover throughout the semester.

Acronyms:

- “TR” = *Theory and Reality: An Introduction to the Philosophy of Science*, by Peter Godfrey-Smith

Unit 1: Introduction to the Philosophy of Science

Day 1: Introductions (no reading)

Day 2: Chapter 1 (TR: 1–18)

Day 3: Chapter 2 (TR: 19–37)

Day 4: A.J. Ayer’s “The Elimination of Metaphysics” (from *Language, Truth, and Logic*)

Day 5: Chapter 3 (TR: 39–56)

Day 6: Peter Achinstein’s “The Grue Paradox” (from *Philosophy of Science: Contemporary Readings*)

Day 7: Chapter 4 (TR: 57–74)

Day 8: Wesley Salmon’s “Rational Prediction” (*The British Journal for the Philosophy of Science* 32: 115–125)

Day 9: Chapter 5 + Chapter 6 (TR: 75–86; 87–101)

Day 10: Gerald Doppelt’s “Kuhn’s Epistemological Relativism: An Interpretation and Defense” (*Inquiry* 21: 33–86)

Day 11: Chapter 12 (TR: 173–189)

Day 12: Ian Hacking’s “Do We See Through a Microscope?” (*Pacific Philosophical Quarterly* 62: 305–322)

Unit 2: Topics in the Philosophy of Science

Day 13: Nick Bostrom’s “Where Are They? Why I Hope the Search for Extraterrestrial Life Finds Nothing” (for the MIT *Technology Review*, 2008)

- Day 14:** Bernard Carr’s “Black Holes, Cosmology, and the Passage of Time: Three Problems at the Limits of Science” (from *The Philosophy of Cosmology*)
- Day 15:** Richard Dawkin’s “Memes, the New Replicators” (from *The Selfish Gene*)
- Day 16:** Sharon Street’s “A Darwinian Dilemma for Realist Theories of Value” (*Philosophical Studies* 127: 109–166)
- Day 17:** Adina L. Roskies’s “How Does the Neuroscience of Decision Making Bear on Our Understanding of Moral Responsibility and Free Will?” (*Current Opinion in Neurobiology* 22: 1022–1026)
- Day 18:** Alex Rosenberg’s “If Economics Is a Science, What Kind of Science Is It?” (from *The Oxford Handbook of Philosophy of Economics*)
- Day 19:** Brian Epstein’s “Individualism, a Recepte for Warding off ‘Spirits’” (from *The Ant Trap: Rebuilding the Foundations of the Social Sciences*)
- Day 20:** Lisa Bortolotti’s “Doctors Without Disorders” (*Aristotelian Society Supplementary Volume* 94: 163–184)
- Day 21:** Edward Stein’s “Essentialism and Constructionism about Sexual Orientation” (from *The Mismeasure of Desire*)
- Day 22:** Janet Kourany’s “Should Some Knowledge Be Forbidden? The Case of Cognitive Differences Research” (*Philosophy of Science* 83: 779–790)

(NB: if you send me a picture of East Lake, I will give you 1 extra credit point.)