

INTRODUCTION TO PHILOSOPHY OF SCIENCE

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Instructor

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Course description

Natural science is our gold standard for learning about the natural world. What about scientific methodology warrants that status? How are scientific theories related to observations? What does scientific objectivity mean? And given that science today uses concepts like “electron”, “spacetime” or “species”, how should we interpret our best scientific theories? These are questions that motivate philosophy of science. This course will give a broad introduction to philosophy of science, first by focusing on some classic general debates, then by looking at debates from philosophy of specific sciences.

Course goals

At the end of this course, students will have developed the following skills:

- Philosophy of science
 - Identify and explain different views in some central debates in philosophy of science
 - Explain some key concepts from philosophy of science
 - Identify philosophical issues in specific scientific disciplines
- Philosophical skills
 - Explain philosophical problems in their own words
 - Identify premises and conclusions of a philosophical argument

Requirements

Attendance and participation

There is no attendance requirement for the course.

Examination

Students will complete a written, supervised exam at the end of the course.

Readings

Okasha, Samir (2016). *Philosophy of Science: Very Short Introduction*. Oxford University Press.

Supplementary readings according to the schedule below. All readings other than the textbook will be made available online.

Tentative course schedule (subject to revision)

Week	Date	Topic	Readings
PART I: GENERAL PHILOSOPHY OF SCIENCE			
23	4/6	Introduction What is science?	Okasha – Chapter 1: What is science?
23	7/6	What is scientific reasoning?	Okasha – Chapter 2: Scientific inferences
24	11/6	Should science be value-free?	Elliott – Chapter 1: An introduction to values in science Okasha – Chapter 7: Science and its critics (focus on “Is science value-free?”)
24	14/6	What do we learn from scientific revolutions?	Okasha – Chapter 5: Scientific change and scientific revolutions
PART II: PHILOSOPHY OF SPECIFIC SCIENCES – METAPHYSICS			
25	18/6	Philosophy of physics: what is space?	Okasha – Chapter 6: Philosophical problems in physics, biology and psychology (focus on “Leibniz versus Newton on absolute space”)
25	20/6	Philosophy of biology: metaphysics of race	Dupré – “What Genes Are, and Why There Are No ‘Genes for Race’”
PART III: PHILOSOPHY OF SPECIFIC SCIENCES – EPISTEMOLOGY			
26	25/6	Philosophy of cosmology: accessing the early universe	Ijjas et al – “Pop Goes the Universe” Guth et al – “A Cosmic Controversy”
26	28/6	Philosophy of the historical sciences	Wylie and Chapman – “Glastonbury: Today, Tomorrow, 2,250 Years Ago”
EXAM			
	04/07	Written exam	N/A

Bibliography

Dupré, J. (2012). 15. What Genes Are, and Why There Are No ‘Genes for Race. *Processes of Life: Essays in the Philosophy of Biology*. Oxford Academic. doi: 10.1093/acprof:oso/9780199691982.003.0016

Elliott, K. C. (2017). *A tapestry of values: An introduction to values in science*. Oxford University Press. (For this course: focus on Chapter 1)

Guth, A. H. et al (2017). A Cosmic Controversy. *Scientific American*, 317(1):5–7. URL <https://www.jstor.org/stable/27109200>.

Ijjas, A., Steinhardt, P.J., and A. Loeb (2017). Pop Goes the Universe. *Scientific American*, 316(2):32–39, doi: 10.1038/scientificamerican0217-32.

Wylie, A. and B. Chapman (2018). “Glastonbury: today, tomorrow, 2,250 years ago.” *Extinct Blog*. March 1st, 2018. URL: <http://www.extinctblog.org/extinct/2018/3/1/glastonbury-today-tomorrow-2250-years-ago>