

Sample Course Descriptions

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1 Philosophy of Social Science

This course focuses on philosophical issues raised by social scientific research. We will investigate questions such as: What is science, and what makes a scientific discipline a social science? What precisely should scientists seek to learn about the social world? Can social phenomena and the sciences that study them be reduced to biology or even physics? What is the proper role of the social sciences in society? How do social scientists define and study such abstract phenomena as intelligence, democracy, or love? Do evaluative claims and assumptions necessarily pervade social scientific research? If so, does that pose a problem for the “objectivity” of these sciences?

Given social sciences’ cross-disciplinary nature, the scope of this course therefore includes social and political philosophy as well as methodological and conceptual issues in the social sciences. Specific topics include:

1. How ordinary concepts are operationally defined and measured in social science research.
2. What criteria should be used in “explicating” ordinary concepts.
3. Reductionism, Holism, and Individualism.
4. What place evaluative (normative) claims have in science generally, and social science in particular.
5. What is “scientific objectivity” and how should it be understood.
6. Conceptual problems about “rationality”.
7. How is well-being studied scientifically and how it ought to be studied.
8. What role social scientific evidence should play in public policy making.
9. What replication failures mean for science and what can be done about them.

This course is not an exhaustive survey. Rather, at the end of the semester you should have a basic feel for what the philosophy of social science is. Most importantly, you should be able to think more clearly, critically, and deeply about the philosophical aspects underlying the scientific study of human beings and their societies.

2 Research Ethics

This is a course in research ethics for first-year graduate students or upper-level undergraduates intending to pursue research-based graduate degrees. It presupposes no prior background in the subject matter or philosophy more generally. We will explore the ethics of science and the responsible conduct of scientific research – with an emphasis on the non-medical sciences. Some questions and topics that we will address include:

1. What is ethics? and what is the purpose and value of ethical decision-making in science?
2. What factors create temptations for researchers to falsify their work or fabricate data?
3. The role(s) of honesty in scientific practice more generally, and on related philosophical accounts of scientific progress and objectivity.
4. What is a Disease?
5. Human subjects research, vulnerable populations, and informed consent.
6. Issues regarding pluralism and evidential standards as they relate to scientific judgment, consensus, and knowledge production.
7. The “replication crisis” in many social sciences, p-hacking and HARKing, and the problem of inductive risk and legitimate function of non-epistemic values in science.
8. What is an appropriate mentoring relationship?
9. Conflicts of interest and stereotype effects.
10. Who should be an author of an article, and how should disputes about authorship be resolved?
11. Social and political responsibilities of researchers. In particular, what is the proper relationship between science and society?

Students will engage these issues with the help of philosophical tools, apply these tools to case studies, and be challenged to think broadly about the role of scientists in society. By the end of the course, you should be able to think more clearly, critically, and deeply about the philosophical aspects of scientific research. Most importantly, you will learn how to critically assess the ethical consequences of science for human populations, non-human animals, and the environment.

3 Environmental Ethics

This course focuses on philosophical issues raised by environmental problems and the sciences designed to resolve them. Its scope therefore includes environmental ethics as well as methodological and conceptual issues in environmental sciences. We will cover the ethical basis for environmental concern; types of environmentalism; the conceptual foundations of conservation biology; rational decision making about environmental issues with competing objectives; and philosophical issues raised by ecological restoration, exotic species, and wilderness preservation, among others. We will also consider the role of science in environmental policy making and activism to understand how analysis and resolution of environmental challenges requires rethinking how science and ethics are integrated. Specific questions and topics include:

1. Theories of intrinsic, instrumental, and transformative value of natural entities.
2. What natural objects have value and why?
3. Exotic species and biodiversity.
4. Philosophical challenges to environmentalism.
5. Wilderness preservation and conservation.
6. Restoration ecology and reference state problems in conservation.
7. “Deep,” shallow, and social ecology.
8. Tragedy of the commons.
9. Poverty and environmentalism.
10. The role of values in ethically-driven sciences.
11. Cost-benefit analysis and environmental policy.

This course is not an exhaustive survey. Rather, at the end of the semester you should have a basic feel for what environmental philosophy is. Most importantly, you should be able to think more clearly, critically, and deeply about the philosophical aspects of the environmental problems we face.

4 Philosophy of Biology

This course is an introduction to the philosophy of biology. It is intended to prepare students for further philosophical coursework and research through critical analysis of conceptual issues in evolutionary theory, genetics, and, to a lesser degree, ecology and conservation biology. General philosophical issues will include: functional and teleological explanation, laws, methodological individualism, natural kinds, reduction and emergence, and scientific confirmation.

Specific issues in the philosophy of biology will include: the nature of fitness, drift, and selection; units and levels of selection; the scientific status of adaptationism; the nature of biological information; and the problem of defining the concept of biodiversity. The course will conclude with Elliott Sober's interesting book (or parts thereof) on testing evolutionary theory, *Evidence and Evolution*, and consider what implications the book has for scientific methodology more generally. Specific questions and topics include:

1. The Nature of Evolutionary Theory. Darwin, Neo-Darwinism, and the Modern Synthesis.
2. Mechanisms of evolutionary change; "forces" and "constraints"; drift, fitness, neutrality, and natural selection.
3. The tautology problem.
4. Interpretations of probabilities in evolutionary theory.
5. Units of selection – genes versus individuals, individuals versus groups; inclusive fitness.
6. Kin selection; from units to levels of selection; multiple-level selection theory; partitioning the effect of selection.
7. Adaptationism and Optimization in Evolutionary Theory.
8. The Panglossian paradigm; evolutionary game theory, stable strategies, and Nash equilibria.
9. What is biological information? Specificity, conformation, and information; communication theory; cybernetics; semantic information; the origins of genetic information.
10. Genotype-phenotype distinctions; defining traits; are there genes for traits and do genes encode them?
11. Distinguishing gene, organism, and environment; complex traits.
12. Genetic and molecular reductionism; multiple realizability.
13. Testing Evolutionary Theory: Bayesianism, frequentism, and likelihoodism; testing methods for selection and drift; model selection and the Akaike framework; creationism, "intelligent" design, and pseudo-science.
14. The fact-value distinction in conservation biology; conservation biology as a teleological science; defining "biodiversity"; ecological diversity and biodiversity; the place prioritization and surrogacy problems.

This course is not an exhaustive survey. Rather, at the end of the semester you should have a basic feel for what the philosophy of biology is. Most importantly, you should be able to think more clearly, critically, and deeply about the philosophical aspects underlying the scientific study of the biological world.