

LPS 40: Scientific Inquiry (Fall 2013)

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Lectures: Tu/Th 9:30–10:50 in SSL 228
Office Hours: Tu 11:00–12:00 and by appointment

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Sections: M 2:00–2:50; Th 1-1:50 in SSL 155
Office Hours: W 10:00-11:00, Th 2:00-3:00, and by appointment

Description: This course will provide an introduction to the philosophy of science, focusing on how ideas about what science is and how it works have evolved over the last century. Questions we will discuss include: (1) What makes a theory “scientific”? Is there a clear difference between science and pseudo-science? (2) Are scientific theories true or approximately true, and if neither, then why science has been so successful? Do we have reason to believe in the theoretical entities scientific theories postulate? (3) What characterizes scientific explanation? (4) Does science have a method, and if so, what is it? How are scientific theories developed and confirmed? (5) Is scientific inquiry “objective”? What role do values and culture play in science?

Course Website: <http://eee.uci.edu/13s/66130>

Required Text: *Theory and Reality*, by Peter Godfrey-Smith (University of Chicago Press, 2003)

Notes on Readings: The principal reading for the course will come from Godfrey-Smith’s *Theory and Reality*. Other required readings—primary texts in philosophy of science—will be made available online. All required readings should be completed *before* the lecture with which they are associated.

Requirements and Grading: The requirements for a grade in this course are: (1) **two short papers** of approximately 750 words (2-3 pages), due to your TA at the end of weeks 4 and 8; (2) **a midterm and a final exam**, each consisting of multiple choice questions and short answer questions; and (3) **regular attendance and participation** at weekly discussion section meetings. The exams will each be worth 25% of your grade; the papers will each be worth 20%; and section participation will be worth 10%. Letter grades will be assigned as follows: A+ $\geq 97 >$ A $\geq 93 >$ A- $\geq 90 >$ B+ $\geq 87 >$ B $\geq 83 >$ B- $\geq 80 >$ C+ $\geq 77 >$ C; etc.

Makeup Exams and Late Papers: If you have a valid reason for a makeup exam or for a late paper, such as a medical emergency or death in the family, inform me and your TA as soon as you can. If you are a student athlete or have similar extracurricular commitments that will force you to miss a deadline, let me know as soon as you become aware of it. Under no circumstances will I give an extension or a makeup exam for a foreseeable conflict that I was not informed of long in advance.

Students with Disabilities: Inform me first week if you will need to take exams through the Disability Service Center. The sooner you notify me, the better that I will be able to accommodate you.

Preferred names/pronouns: This course is intended as a safe space for all students at UCI. If you have a preferred name that is not listed on the official roster, or if you have a preference regarding gender pronouns, please contact me and I will do my best to follow your preferences.

Academic Integrity: UCI has a strict policy on academic dishonesty; violations, including cheating and plagiarism, will be report to the appropriate authorities.

Week 0: Introduction

Thursday (26 September 2013) Godfrey-Smith, Ch. 1.

Week 1: Logical Positivism and Empiricism

Tuesday (1 October 2013) Godfrey-Smith, Ch. 2.

Thursday (3 October 2013) Schlick, "Positivism and Realism," §2; and
Russell, "On Induction", from *The Problems of Philosophy*.

Week 2: Induction

Tuesday (8 October 2013) Godfrey-Smith, Ch. 3.

Thursday (10 October 2013) **Class Canceled**

Week 3: Popper and Kuhn

Tuesday (15 October 2013) Godfrey-Smith, Ch. 4; and
Popper, Excerpt from *Conjectures and Refutations*.

Thursday (17 October 2013) Godfrey-Smith, Ch. 5; and
Kuhn, Excerpt from *The Structure of Scientific Revolutions*.

Week 4: Kuhn and His Aftermath

Tuesday (22 October 2013) Godfrey-Smith, Ch. 6; and
Kuhn, Excerpt from *The Structure of Scientific Revolutions*.

Thursday (24 October 2013) Godfrey-Smith, Ch. 7.

First Paper Due Friday

Week 5: Midterm/Sociology of Science

Tuesday (29 October 2013) **Midterm Exam**

Thursday (31 October 2013) Godfrey-Smith, Ch. 8; and
Forman, Excerpt from "Weimar Culture, Causality, and Quantum Theory."

Week 6: Feminist Critiques of Science: Values and Objectivity

Tuesday (5 November 2013) Godfrey-Smith, Ch. 9; and
Longino, Excerpt from *Science as Social Knowledge*.

Thursday (7 November 2013) Okruhlik, "Gender and the Biological Sciences."

Week 7: Naturalism

Tuesday (12 November 2013) Godfrey-Smith, Chs. 10 & 11.

Thursday (14 November 2013) Sklar, "I'd Love to be a Naturalist..." (skip §§5&6); and
Maddy, *Second Philosophy*, II.1.

Week 8: Scientific Realism

Tuesday (19 November 2013) Godfrey-Smith, Ch. 12; and
van Fraassen, Excerpt from *The Scientific Image*.

Thursday (21 November 2013) Stanford, "Pyrrhic Victories for Scientific Realism."

Second Paper Due Friday

Week 9: Scientific Explanation

Tuesday (26 November 2013) Godfrey-Smith, Ch. 13; and
Hempel, "Explanation in Science and History," §§1 – 3.

Thursday (28 November 2013) **Thanksgiving**

Week 10: Explanation (cont.)/Confirmation

Tuesday (3 December 2013) Salmon, "Scientific Explanation: Causation and Unification" (skip §6); and
van Fraassen, Excerpt from *The Scientific Image*.

Thursday (5 December 2013) Godfrey-Smith, Chs. 14 & 15.

Week 11: Finals

Thursday (12 December 2013) **Final Exam** (8am)