

# PHIL 4410/6410: Philosophy of Natural Science

Kleiner  
Spring 2009  
TR, 2:00–3:15 p.m.  
205S Peabody Hall

Dr. Scott Kleiner  
Office: 122 Peabody Hall  
Phone: 706-542-2826  
Email: [skleiner@uga.edu](mailto:skleiner@uga.edu)  
Office hours: T, 3:15–4:30 pm and by appointment

## **I. Introduction:**

Philosophy of science focuses upon philosophical problems raised by science and the implications that science has for traditional philosophical problems. Among the traditional philosophical problems are the problems of the nature and sources of human knowledge (epistemology) and of the kinds of ultimate reality and their mutual dependencies (metaphysics). One issue raised by science concerns the nature of scientific knowledge: Is scientific knowledge superior to other kinds of knowledge? If so, what makes it so? Other problems include these: Is there a “scientific method,” and if so, what is the basis of its validity and what can it be expected to generate? Can it generate or guarantee true beliefs or must scientific beliefs be valued for other reasons? What are scientific laws and theories, and what, if anything, can they tell us about ultimate reality? Is scientific belief cumulative over time, or is it subject to evolution or catastrophic change? Can scientific observation be pure and unbiased or must it always contain an element of theoretical preconception or socially conditioned value? Can science inform us on ethical matters?

## **II. Policy:**

University policies on academic honesty will be strictly enforced. This policy extends to following strictly instructions for the take home exams. All written work must be truthfully represented as your own. Penalties for plagiarism extend to papers purchased from other sources or taken from fraternity or sorority files. Regular attendance in classes is part of the requirements for this course. You will be allowed five absences only. Excuses will not be accepted, so you should plan to use your absences for emergencies only. If you exceed the allowed number of absences your registration will be canceled for lack of attendance. This policy will be strictly enforced.

### III. Grades:

Grades will be computed from the following, weighing each equally (25%):

- Three take-home exams, due **Feb 12, Mar 31** and at the time of the final exam scheduled for this period.
- A term paper for Phil 6410, which will be due **April 28**. The paper should focus on a topic in the philosophy of science of interest to you, and should represent some independent research on your part. You will be required to discuss your interests with us early in the semester and provide us with a preliminary proposal and bibliography by **Feb 10**

### III. Texts:

1. Cover, J.A. and Curd, M. *Philosophy of Science: the central issues*. New York: W.W. Norton, 1998 (PS)
2. Rosenberg A. and McShea D. *Philosophy of Biology: a contemporary introduction*. New York: Routledge 2008 (PB)
3. Course packet, to be purchased in Bel-Jean Copy-Print Center (163 E. Broad).
4. In addition, some lecture notes and handouts will be available on the course web site.

### I. Topics and Readings:

---

Jan 8, R: Introduction: Syllabus and Overview

#### PART 1: GENERAL PHILOSOPHY OF SCIENCE

**Jan 13, 15: Science and pseudoscience:** PS Popper, Kuhn, Lakatos

PS Ruse, Laudan, Thagard

**Jan 20,22: Rationality, Objectivity and Values in Science:** Kuhn, McMullen

Longino, Laudan

**Jan 27, 29: Underdetermination:** Duhem, Quine, Gillies, Laudan

**Feb 3: Induction:** Lipton, Popper

**Feb 5: Laws:** Ayer, Cartwright

**Feb 10: Term Paper proposals due (6410) Scientific realism:** Maxwell, van Fraassen

**Feb 10, 12, 24 : First take-home essay due.** Laudan, Hacking, Fine, Musgrave

**Feb 26:** Open

## **PART 2: PHILOSOPHY OF BIOLOGY**

**Mar 3, 5: (Mid Term) Chap 1: Darwin and Natural Selection**

**Mar 10, 12: Spring Break**

**Mar 17, 19: Chap. 2: Biological Laws and Theories**

**Mar 24: Withdrawal deadline.**

**Mar 24,26: Chap 3: Adaptationsim, etc.**

**Mar 31: Second take-home essay due**

**Mar 31, April 2: Chap. 4 Reduction and Reductionism**

**April 7, 9: Chap. 5: Progress in evolution**

**April 16, 21: Chap 6: Levels of selection**

**April 23, 28: Chap 7: Biology, ethics and social science**

**April 28: (Last Class) Term Papers due (6410)**