Science asserts an epistemically privileged role among our attempts to grasp the world around and within us. This assertion is based on the empirical support which mature scientific theories garner and on the systematic and methodical way in which they do this. To understand this relation between evidence and theory is the ambition of theories of ‘confirmation’. This seminar attempts to survey a few of these, to analyze what ‘evidence’ is, and to enter various recent philosophical debates concerning some types of experiments and their epistemic status in various fields of scientific enquiry.

Prerequisites: I assume no particular background either in philosophy or in science. Having said that, however, there will be some more technically and scientifically more involved readings. If you don’t want to present or write on these—which is fine—, you should at least be prepared to make a reasonable effort to grasp the material.

Distribution requirements: This course can be counted towards the fulfillment of the distribution requirement in philosophy of science.

Required texts

All mandatory (and perhaps some recommended) readings will be made available through e-reserves or online. The Stanford Encyclopedia of Philosophy entries are downloadable from http://plato.stanford.edu/. Go to the course web page for links.

Course requirements and evaluation

The following are necessary and jointly sufficient conditions to obtain letter grade credit for this seminar:

1. Participation: You are expected to attend all classes and to actively participate in discussions. If you have to miss a class, you must let me know in advance.

2. Class presentations: Every participant gives two presentations of no more than 15 minutes. You are expected to do something visual (blackboard, overheads, handout). Do not try to be comprehensive; rather, synthesize the important parts (main thesis, main argument) and offer some critical thoughts for discussion.
3. **Short papers:** Submit 5 short papers of 3 to 4 pages, reflecting readings for the meeting when the paper is submitted. I want to see a clear statement of the main thesis of the article you are discussing, a brief summary of the main argument, and *your independent judgment and critical reflection*.

or

**Seminar paper:** Submit a term paper of 15 to 20 pages or so, on a topic approved by me. Please submit a paragraph-long outline of your project by Friday, **18 November 2011**. The full paper is due on Thursday, **8 December 2011**.

**Topics and readings**

Please note that the topics listed do not map bijectively to meetings; the plan would to just go through them more or less in order. The reading list is tentative and may still change, in particular upon popular demand. In particular, I only expect us to cover a strict subset of this list.

**Background reading**

For those of you who have never studied inductive logic, confirmation, probability, Bayesianism etc before, the following are useful sources at a more introductory level:


**(1) Hypothetico-deductivism and the paradoxes of confirmation**

(2) Bayesianism

(a) The basics: probability calculus and Bayesian confirmation


(b) Bayes and underdetermination

- Jon Dorling, “Bayesian personalism, the methodology of scientific research programmes, and Duhem’s problem”, *Studies in the History and Philosophy of Science* 10 (1979): 177-187.
- Earman, *Bayes or Bust*, 83-85 (§3.7).

(c) Criticisms of Bayesianism


(3) Alternatives: formal learning theory and severe testing/error analysis


(4) Data and evidence

(5) Types of experiments

(a) Controlled experiments in different sciences


(b) Simulations and modelling


(c) Thought experiments