**SAN FRANCISCO STATE UNIVERSITY**
**Department of Philosophy**
**Spring 2010**

# Phil 350
# Philosophy of Science

T/Th:12:35-1:50
**HUM 109**

Instructor: **Dr. Isabelle Peschard**
**Office**: HUM 421 **Office hours**: T/Th: 10:00-12-00

## Course Objectives:

To introduce the students to some of the main debates in Philosophy of Science, as well as to some of the main actors in these debates.

To give to the students a sense of the recent development of the discipline.

To develop philosophical analysis skills through the close reading and written discussion of some original articles.

## Course Description:

Our approach will be based on case studies, (the discovery of bacteria by Pasteur, the construction of the model of the DNA, a study of the soil in the Amazon forest, some studies in anthropology...). Through the analysis of these different scientific episodes, we will look upon different views on how 'science works' and will discuss some of the main philosophical controversies concerning science and scientific activity. Our journey will take us through questions like:

What makes scientific investigation different from other forms of investigation of the world? Is there something that can be recognized as the mark of scientific claims about the world?

Could that be in the procedure through which they are *produced*? In the procedure through which they are *confirmed*? Is there something like the 'confirmation' of a scientific theory? But we know that some scientific claims have been proved false in the past. So what is so special about science?

## Textbook:

- Bruno Latour, *Pandora's Hope* (especially chapters 1, 2, 4 and 5)
- Reader: Original articles and excerpts by Francis Bacon, Bertrand Russel, Karl Hempel, Thomas Kuhn, Ronald Giere, Elisabeth Potter, Helen Longino [will be available at the SFSU bookstore at the beginning of the classes].

Additional suggested readings, helpful in that they give an overview of some traditional debates in philosophy of science:

The first and the second cover more or less the same topics, the second has a larger range, but the first one is less dense, so easier and more pleasant to read for non-specialists; they are both focused on contemporary philosophers ($20^{th}$ c.)

The third one is historical, starting with Aristotle and up to the 20c; it covers a large range of issues, but briefly- that makes it quite easy to read and very interesting- but if you are really interested in contemporary issues, you will need something that goes a bit deeper, like the first and the second.

James Ladyman *Understanding Philosophy of Science*, Routledge, 2002.

Peter Godfrey-Smith *An Introduction to the philosophy of science. Theory and Reality.* The University of Chicago Press, 2003.
John Losee *A Historical Introduction to the Philosophy of Science*, Oxford University Science 1972, 2001.

**Assignements**: TO READ CAREFULLY

• Attendance and Participation during discussion classes are *required*- Students may miss up to three classes with no penalty and no justification.

- Homework: It is essential that you come to class ready, i.e. having read the papers. Regularly, there will be some homework to prepare on the readings and to hand-in at the beginning of the class. That will be part of the grade.
- Essays: You will be required to write two essays (between 1800 and 2200 words) at the beginning and at the end of the semester.
- Mid-term exam: there will be a midterm exam, done in class toward the middle of the semester to test your reading of the papers and your understanding of the issues discussed in class.

*Papers must be handed in on time*. There will be a penalty for late papers and *after one week late papers may not be accepted*.
While working on your essay, please make regular backup copies on disc or USB key in case of computer problems: *computer problems will not be accepted as a reason for essay extension.*

**Grading:** Homework + Participation 20%
1st paper: 25 %
Mid-term: 25 %
Final paper: 30 %

SPECIAL ANNOUNCEMENTS
**Disability:** You are strongly invited to communicate with me at the outset of the course or at your discretion about any disabilities or medical conditions that may affect your course participation, so that we can make the course as accessible as possible for you. You can also contact the Disability Resource Center at 338-2472 (Voice/TDD)
**Plagiarism**: occurs when someone misrepresents the work of another as his or her own, whether by copying or inserting text without appropriate acknowledgement, or by improper reliance on someone else's work or results. Any assignment found to be plagiarized will be given an "F" grade, and will be reported to the Dean of the College. See www.sfsu.edu/~collhum/plagiarism.html
**Dual submission:** any assignment for which work is found to have been submitted to another class, whether here or elsewhere, will receive an "F" grade.

**Library:** special arrangements for obtaining library materials are needed during the construction in the main library. Please consult the library's informational website at www.library.sfsu.edu/about/building/index.php

CONTENT AND MAIN READINGS

INTRODUCTION

- Philosophy of Science: What, How and Why?
- Forms of Reasoning: Inductive vs Deductive

LOGICAL VIEW ON SCIENCE

- Inductive Method?
  ***Case Study: The nature of heat***

*Readings*: F. Bacon, *The New Organon* (excerpts-reader)
D. Hume, *Enquiry Concerning Human Understanding* (excerpts-reader)
B. Russel, *Problems on Philosophy*, chap.6 "On Induction" (reader)

- Hypothetico-Deductive method?
  ***Case Study: Semmelweis' inquiry***

*Readings*: C. Hempel *Philosophy of Natural Science* (excerpts—reader)
'Scientific Inquiry: Invention and test'
'The test of a hypothesis: Its logic and its force'

HISTORICAL VIEW ON SCIENCE: From Normal Science to Revolutions

***Case Studies: The beginning of the science of electricity; The discovery of oxygen.***

*Readings*: S. Toulmin *Foresight and Understanding (*excerpts—ilearn)
T. Kuhn *The Structure of Scientific Revolutions (*excerpts—reader)

SCIENTIFIC MODELS: Making and Assessing Models

***Case Study: The model of the DNA molecule***

*Readings*: R. Giere, *Understanding Scientific Reasoning* (excerpts—reader)

SCIENCE AND VALUES: Dichotomy between facts and values?

**Case Study: Anthropological research on divorce**

*Readings*: E. Potter 'Feminist Value Theory' (Reader)
H. Longino 'Values and Objectivity' (Reader)

SCIENCE AND REALITY : Construction or Discovery?

***Case Study*: In the Amazon forest**

*Readings*: B. Latour, *Pandora's Hope* (Textbook)
E.Loyd: 'Objectivity and the Double Standard' (ilearn)
L. Datson and P Galison: 'Short History of Objectivity' (hand out)

***Case Study*: Pasteur and the birth of lactic acid ferment**

*Readings*: B. Latour, *Pandora's Hope* (Textbook)
H. Putnam: 'On 'The Absolute Conception of the World' (ilearn)
T. Nagel: *The view from nowhere*, Introduction (ilearn)
Arthur Fine: 'The Viewpoint of No-One in Particular' (APA, Presidential Address, 1998)