

INTRODUCTION TO THEORETICAL PHILOSOPHY: PHILOSOPHY OF SCIENCE

(Course: 55-152.13)

Instructor Details

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Course Details

Montag 10:15-11:45
Hörsaal E, Von-Melle-Park 6
Begin.: 13. April 2015

Course Information

Description

Philosophy of science deals with philosophical and foundational problems that arise within science. Roughly speaking, it can be divided into two major strands: general philosophy of science and the philosophies of the individual sciences. General philosophy of science strives to understand science as a cognitive activity that is uniquely capable of yielding justified beliefs about the world. Some of the questions raised by general philosophy of science include:

- What is the aim (or aims) and method (or methods) of science? More generally, what is science, in the first place, and how does it differ from non- or pseudo-science?
- What is a scientific theory and how do scientific theories relate to (and thus represent) the world (if at all)? How do theoretical concepts get their meaning? And how are they related to observation?
- What is the structure and content of scientific concepts such as causation, explanation, confirmation, theory, experiment, model, reduction, and probability?
- What rules, if any, govern theory-change in science? What is the function of experiment? What role do values (both epistemic and pragmatic) play in scientific decisions and how are they related to social, cultural, and gender factors?

Meanwhile, the philosophy of the individual sciences focuses on more specialized issues. Some of the questions here concern the basic conceptual structure of these particular sciences (e.g., the problem of measurement in quantum mechanics, the ontology of space and time, the concepts of biological function and adaptation, the nature of psychological and sociological explanation, the status of economic models); others relate to the commitments that flow from the individual sciences (What is the right interpretation of quantum mechanics? Are there laws in the special sciences? What is the status of causal mechanisms?).

In this course, we will discuss many of these questions in the light of examples from contemporary science. During the course of discussing these problems, we will study many of the major positions concerning the nature of science and of scientific knowledge.

Objectives

This course is intended to

1. Introduce students to basic texts and topics in philosophy of sciences,
2. Introduce students to the approach and methods of theoretical philosophy
3. Prepare students for future research and study both philosophy of science and, more generally, theoretical philosophy.

Outcomes

Students taking this course will

1. Acquire knowledge of some of the main issues, arguments, and claims concerning philosophy of science.
2. Develop an understanding of how these issues/arguments/claims fit together.
3. Engage closely and critically with classic and contemporary literature in this area
4. Develop their ability to think & write philosophically

Requirements

- *Reading.* Students are expected to read all specified material prior to attending class. You must have read the required readings before class; otherwise you won't be able to follow/participate in the discussion.
- *Attendance.* University regulations state that students are expected to attend a majority of a course's meetings in order to receive credit for participation (maximum 3 classes missed). To evidence that you have met these regulations, students are expected to complete weekly assignments, consisting of a small number of questions about the reading. Additionally, for students taking the course for maximum credit points, attendance in the affiliated tutorial is mandatory. The tutorial meets on Mondays, 12:00-14:00, in Room 1052, VMP 6.
- *Weekly assignments:* Each week, short answer questions concerning the weekly reading will be uploaded to the course's 'Readings & Assignments' page. Students are expected to complete and submit these assignments, either to their tutor (if attending the tutorial) or to the course instructor (if not). These will be graded and returned, with the top three grades being included in the student's overall course grade (where appropriate).
- *Final exam:* To receive credit for this class, students must pass the final exam, scheduled for 06.07.2015. The exam will consist of four parts:
 - A selection of True & False Questions – 10% of exam grade
 - A selection of Multiple Choice Questions – 15% of exam grade
 - A selection of Short Answer Questions – 25% of exam grade
 - An Essay Question – 50% - of exam gradeFurther details regarding the exam will be provided during the course of the term.

Texts

The primary text for this course is an excellent introductory textbook by James Ladyman:

LADYMAN, J. *Understanding the Philosophy of Science*. (London: Routledge, 2002).

A copy should be on reserve in the library. Along with a significant portion of this book, we will also read a selection of related journal articles and possibly some snippets from other monographs. As much of this reading as possible will be distributed as pdf's via the course webpage, available here:

<http://goo.gl/fRP14w>

Readings and will be uploaded to the associated 'Readings & Assignments' page. Note that the Readings page is password protected; the password is _____. Should you lose the password, please contact either the course organizer or the tutor for a reminder!

Preliminary Schedule

(Note: as with most things in life, this schedule is subject to change)

Week 1 (Apr 6) – NO CLASS DUE TO HOLIDAY

Week 2 (Apr 13) – Introduction & Overview of the Course

- No required reading

§I. CHARACTERIZING SCIENCE

Week 3 (Apr 20) – Science vs. Pseudo-Science & Naïve Inductivism

- Ruse, M. – ‘Creation-Science is not science’
- Parts of Ladyman, Chpt. 1

Week 4 (Apr 27) – Against (Naïve) Inductivism: Problems of Induction

- Selections from Hume & Goodman
- Ladyman, Chpt. 2

Week 5 (May 4) – Alternatives to Inductivism: Falsificationism

- Selections from Popper & Lakatos
- Ladyman, Chpt. 3

Week 6 (May 11) – Alternatives to Inductivism: Normal Science, Puzzle-Solving, & Scientific Revolutions

- Selections from Kuhn
- Ladyman, Chpt. 4

§II. SCIENTIFIC REALISM VS. ANTI-REALISM

Week 7 (May 18) – Realism about Science: The Case for

- Ladyman, Chpt. 5

Week 8 (May 25) – NO CLASS DUE TO HOLIDAY

Week 9 (June 1) – Against Realism: Underdetermination

- Selections from Quine & van Fraassen
- Parts of Ladyman, Chpt. 6

Week 10 (June 8) – Alternative to Realism: Constructive Empiricism

- Selections from van Fraassen
- Parts of Ladyman, Chpt. 6

Week 11 (June 15) – Against Realism: Scepticism about Inference to the Best Explanation

- Selections from Hempel & Lipton
- Ladyman, Chpt. 7

Week 12 (June 22) – Against Realism: The Pessimistic Meta-Induction

- Selections from Laudén
- Ladyman, Chpt. 8

Week 13 (June 29) – Alternative to Realism: Structural Realism

- Selections from Ladyman, J – ‘What is Structural Realism’

Week 14 (July 6) - EXAM