Philosophy of Science 2015/2016 (W&K1)

Course code: 700191

Course Organiser
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Course Description Is graphology a science? What is it that distinguishes the predictions made by an astrologist from those made by a chemist? Did Galileo have reason to believe Aristotelian dynamic? Does scientific knowledge progress? Are the sciences objective? What is explanation? What is the relation between explaining and understanding? Does science aim at producing true descriptions of things in the world?

In this course, we shall explore these and related questions, discussing the nature, aims, and limitations of scientific practice. We shall spend most of our time examining how several inter-related questions about the role of value and rationality in science have shaped, and continue to shape, philosophy of science since the early 1900s. After this discussion of rationality and value in science, we shall then move on to focus on three models of scientific explanation, and on the scientific realism debate. Specifically, we shall cover three sets of inter-related topics:
(A) Rationality, value and scientific knowledge (8 classes)
(B) Models scientific explanation (2 classes)
(C) Evidence, truth and the aims of science (3 classes)

The course consists of lectures and tutorials.
The course is conducted in English.

Course Objectives To introduce you to key debates and issues in the philosophy of science. To introduce you to the history of the philosophy of science. To deepen your skills in reading philosophical papers. To develop your skills for writing philosophical arguments and prose. To prepare you for deeper investigations in the philosophy of science.

Learning Goals We shall aim at four learning goals.
Upon successful completion of the course, you will be able:
1) To characterize and summarize some of the central theories in the philosophy of science concerning topics (A)-(C).
2) To explain and discuss (using specific examples) central claims in the philosophy of science about (A)-(C).
3) To analyze and elucidate prominent arguments relevant to topics (A)-(C).
4) To reason about and evaluate prominent claims and arguments relevant to topics (A)-(C).

Assessment Your final grade will be determined by:
- Preparation and participation in class and in the tutorials (10%).
- One mid-term in-class exam consisting of three open-ended questions (30%) Date 04-04-16
- One mid-term take home essay (25%) Date: 09-03-16
- One final essay (35%) Date: 02-06-16

NOTE on the tutorials
The main aim of the tutorials is to help you analyse argumentative papers in philosophy of science, with an emphasis on discussion and constructive criticism. Tutorials also provide you with an opportunity to discuss any question you may have about practical matters.
If you are a part-time student who cannot attend the tutorials, or if you expect to miss more than three tutorials, you will have to write three short summaries of readings on this syllabus in order to make up for the assessment component “preparation and participation in class and in the tutorials (10%).”
Each summary should focus on one reading. It should clearly state the thesis put forward in the reading under consideration, and accurately reconstruct the argument in support of that thesis.
You should not use any direct quotation from the reading. Use your own words!
The length of your summary should not exceed 500 words. Deadlines for the short summaries are:
- March 10th: first summary.
- April 10th: second summary.
- May 10th: third summary.
Each summary will be graded with respect to its accuracy, clarity, and structure.
Please email the summaries to Colin at: c.elliot@uvt.nl.

NOTE on the take home essays
Essay topics will be made available at the beginning of the course. Detailed guidance about your essay will be given during the tutorials.
Papers are to be 1,500 words long (references excluded).
*Papers longer than 1,500 words will receive a penalty.* 0.5 point grade will be subtracted to papers from 1,501 to 1,600 words long; 1 point grade will be subtracted to papers from 1,601 to 1,700 words long, and so forth. *Conciseness is a very useful intellectual enterprise.*
Papers will be assessed with respect to 1) your grasp of the issue, argument, and relevant reading material; 2) your capacity for original, critical evaluation of the issue, argument, and relevant reading material; 3) your exposition (grammar, prose, composition).
NOTE plagiarism will result in failure of the course and disciplinary action.
Please place a hard copy of your essay in Silvia’s pigeonhole (Dante building, 1st floor) before the deadline.
**Texts** We shall work on articles and excerpts from books. All the required readings for the classes and tutorials are available either online, through the UvT Library WorldCat, or in the UvT library. If you have troubles with finding any of the reading below and/or you would like further reading suggestions, please email your tutor or the course organizer.

There is no required textbook.

A number of good introductions to the philosophy of science, which you may want to consult, are available in the UvT library. Especially recommend are:


If you want to buy any books, these classics in the philosophy of science are the choices most likely to be of lasting value:


**Schedule and Readings**

**A. Rationality, value, and scientific knowledge** (8 classes)

- **Thursday 4-02**  
  **Class 1**  
  **Topic:** *The demarcation problem*. How should we distinguish science from pseudoscience?  
  **Background reading**  
  **Suggested readings**  

- **Thursday 11-02**  
  **Class 2**  
  **Topic:** *The problem of induction*. Can we prove that scientific inference is reliable?  
  **Reading for this lecture**  
  URL = <http://goo.gl/A3BsKd>
Suggested readings

- **Thursday 18-02**
  **Class 3**
  **Topic:** *Logical Positivism*. Are only scientific statements meaningful?
  **Reading for this lecture**
  **Suggested readings**

- **Thursday 25-02**
  **Class 4**
  **Topic:** *Karl Popper*. What’s the rational method for scientific investigation?
  **Reading for the lecture**
  **Suggested readings**

- **Thursday 03-03**
  **Class 5**
  **Topic:** *Thomas Kuhn*. What is the role of rationality in scientific change?
  **Reading for lecture**

Suggested readings

- Thursday 10-03
  Class 6
  Topic: *Imre Lakatos*. How does scientific knowledge grow over history?

  Reading for the lecture
  Imre Lakatos’s biography in the St Andrews University History of Mathematics URL = <http://www-gap.dcs.st-and.ac.uk/~history/Biographies/Lakatos.html>

Suggested readings

- Thursday 17-03
  Class 7
Topic: Paul Feyerabend. Does anything go in science?

Readings for the lecture (Read both)

Suggested readings:

Thursday 24-03
Class 8
Topic: Feminist approaches to science. Should science be free from feminist values?

Readings for the lecture
URL = < http://plato.stanford.edu/entries/scientific-objectivity/>

Suggested readings

B. Models of explanation (2 Classes)

Thursday 14-04
Class 9
Topic: The covering law model

Reading for the lecture

Suggested readings


**Thursday 21-04**

Class 10

**Topic: The causal-mechanical model**

Reading for the lecture:


**Suggested readings**


**C. Evidence, truth and the aim of science**

**Thursday 28-04**

Class 11

**Topic: Evidence. Do the human sciences require a peculiar method of inquiry?**

Reading for the lecture:


**Suggested readings**


Thursday 12-05
Class 12
Topic: Scientific Realism. Does science aim at truth?
Reading for the lecture

Suggested readings

Thursday 19-05
Class 13
Topic: Constructive Empiricism. Does science just aim at empirical adequacy?
Reading for lecture
URL: <http://goo.gl/Y1jAAB>

Suggested readings

Thursday 26-05
General review class
Tutorials. Readings

Wed 10-02: Tutorial 1

Wed 17-02: Tutorial 2

Wed 24-02: Tutorial 3

Tutorial 4: Wed 02-03

Tutorial 5: Wed 09-03

Tutorial 6 Wed 16-03

Tutorial 7: Wed 23-03

Tutorial 8: Wed 13-04

Tutorial 9: Wed 20-04

Tutorial 10: Wed 11-05

Tutorial 11: Wed 18-05

Tutorial 12: Wed 25-05