Introduction to Philosophy of Science

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AY 2023-2024
B.A. level course
Credit value: 2 credits (4 ECTS credits)
Prerequisites: None
Consultation: after classes or by appointment at kronfeldnerm@ceu.edu

COURSE DESCRIPTION
The aim of this course is to give students a basic introduction to scientific practice and the kinds of knowledge produced thereby. Students will learn to understand how science differs from other ways of producing knowledge, and also about similarities of natural sciences, social sciences, and the humanities. After a historical overview of the development of sciences, we will address questions like the following: Is there a way to demarcate science from pseudo-science or ideology? How is scientific knowledge made reliable? What is induction? What is confirmation? Is it giving us access to reality or is it merely a tool, e.g., for successful prediction or explanation? The so-called “analytic” project within philosophy of science focused on these and similar (by now) classic questions. During the second half of the 20th century, when history of science and the intermingling of science and society were gaining a more prominent role in philosophical debates, attention in philosophy of science diversified towards further questions, for instance: What follows philosophically from looking at the history of science, in particular the study of scientific revolutions? If social values influence sciences, is that legitimate? In which sense, if any, is science itself social and political? How do we create order by classifying things into kinds (or sets)? What does it mean that sciences causally explain phenomena? And what shall one do with radical science skepticism, as in climate change denial?

LEARNING OUTCOMES
Upon completion of their work for this course, students will be able to critically look at the knowledge production of social sciences and be prepared for more specific courses on the philosophy of the social sciences and further methodological education. Students will understand how sciences function historically, epistemically, and socially.

LEARNING ACTIVITIES AND TEACHING METHODS
The course will be based on weekly lectures, discussions, and short exercises. The earlier parts will involve textbook readings and short mandatory readings, the later parts key paper-length contributions. Class attendance is mandatory.

ASSESSMENT
There will be two exams, with a suitable mix of closed and open questions, one mid-term and one toward the end of the term. The better of the two exams is counted twice. Excellent class participation (including exercises) can contribute up to plus one grade (e.g. from A- to A) to the final grade.
CLASS SCHEDULE

Part I:  
What is science?  
1. Science in context and a historical introduction: From Aristotle to modern science  
   (Textbook reading: Barker & Kitcher, 2014, pp. 1-8.)  
2. Empiricism, positivism, and demarcation problems  
   (Reread material from last week; watch podcast (see slides from Wk1);  
   Reading for exercise: Carnap, 1931, pp. 1-10)

Scientific method  
3. Induction - the glory of science and the scandal of philosophy  
   (Textbook reading: Godfrey-Smith, 2003, pp. 19-46; Reading for exercise:  
   Selected pages from Popper, ca. 3 pages).  
4. Confirmation of theories and inference to the best explanation  
   (Textbook: Reread Godfrey-Smith from last week, especially pp. 39-46.  
   Reading for exercises: Selected pages from Harman (ca. 3 pages).  
5. History, society, perspectives, and alternative way of knowledge production  
   (Textbook Reading: Barker & Kitcher, pp. 78-113. (Reading for exercise:  
   Selected pages from Kuhn (ca. 3 pages) and from Rudner (ca. 3 pages).

Mid-term exam  
6. Exam preparation and mid-term exam

Part II:  
Epistemic goals  
7. Explanation and causation  
   (Reading: Bechtel & Abrahamsen)  
8. Classification and kinds  
   (Reading: Hacking)  
9. Description, prediction, generalizations, and idealizations  
   (Reading: Sugden)  
10. Additional topic to be determined (e.g., influence of values, evidence-based  
    policy; community research, etc.); Exam preparation.

End-term exam  
11. End of term exam

Excursion  
12. Strategic science skepticism film screening (based on Oreskes & Conway 2010)  
   or Josephinum museum visit.

COURSE MATERIALS  
All weekly readings will be provided at the e-learning platform for the course and will  
consist of a mix of primary and secondary sources. There will also be a course reserve of  
the core reference material.

Recommended textbook introductions to the philosophy of science:  
  University Press. (course reserve)

Collections of classical and contemporary readings

As background reference material students shall use the following:
- The Stanford Encyclopedia of Philosophy is usually the best encyclopedia when philosophy of science is at issue and it is open access.

Specific mandatory readings (further readings will be added as need arises, see Lecture slides)