Syllabus

PHILOSOPHY OF SCIENCE: CORE CONTEMPORARY ISSUES

Lecturer and lab instructor:	Maria Kronfeldner
No. of Credits:	2
Status:	Elective, MA-level (required for **Science Studies Certificate**)
Teaching format:	2-hour/week (lecture, seminar)
Area:	Metaphysics and Epistemology
Time:	Tuesday, 11:00-12:40 (except otherwise noted)

Description

The way science works raises deep and pressing philosophical questions. Is there a way to demarcate science from pseudo-science or ideology? How is scientific knowledge made reliable? 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 issues: the demarcation of science, falsification, confirmation, realism versus instrumentalism, the nature of theories, and how laws of nature and explanation should be understood. 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, the focus broadened towards further issues, 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, and therefore normative?

After reviewing the classic issues, Part I of the course discusses the more contemporary issues regarding history, value-ladenness and the social structure of science. Part II will focus on the kinds of knowledge sciences produce, by discussing specific epistemic goals of scientists (i.e., description, classification, explanation). Part III will deal with contemporary issues regarding objectivity, science skepticism, biases and the production of ignorance.

By taking a philosophical stance, students will learn how to think about sciences in a philosophical manner – that is, regarding science in general and regarding their own respective disciplines. They shall understand how sciences function epistemically and socially.

Learning goals, format, deliverables, requirements, and grading

Learning goals: Students will

- get an introduction to the philosophy of science that connects philosophy of science with science studies more generally,
- learn to understand and appreciate the nature of philosophical problems,
- critically look at their discipline's goals, practices and kinds of knowledge produced thereby, and
- reflect on the role of sciences in society.

Format and deliverables: Part I will have lectures and discussions, with Barker and Kitcher's (2013) introduction as background reading. Part I will close with a short test. Part II and III will concentrate on short primary readings and maybe further material from the other readings. These parts will consist of short student presentations and intensive discussions.

Requirements: Students can join even if they have not previously done a basic introduction to philosophy of science. Students are required to prepare the required reading for class, to regularly and actively participate in class, to take the short test after Part I, and to present and write about a topic of their choice (10 min presentation, 1000 word essay).

Assessment: Grades will be based on the results of the mid-term test (50%), end-of-term 1000 word essay (40%), and in class participation (10%).

For general rules of participation and grading: see Handout "General Rules: Participation, Presentations, Written Assignments" and "Further rules for 10-min class presentation" (attached at the end of this Syllabus)

Overview

I. Major issues in philosophy of science

1. Introduction (B&K, Ch. 1)
2. The analytic project of understanding scientific reasoning, I (B&K, Ch. 2, till p. 24) – on FRI, Oct 06, 3:30-5:10, N15/203)
3. The analytic project … II (B&K, pp. 25-37) – on FRI, Oct 06, 5:30-7:10, N15/203
4. The view from the sciences (B&K, Ch. 3)
5. Science, history, and society (B&K, Ch. 4)
6. Critical voices, values, and politics (B&K, Ch. 5 and Ch. 6)
7. MID-TERM TEST (Tue, Oct 31, Room: t.b.d.!)

II. Contemporary issues about epistemic goals of science

8. Description (Reading: Paper from Haslanger on generics)
9. Explanation (Reading: B&K, Ch. 2 part on explanation, p. 38-46; Paper from Machamer, Darden and Craver on mechanistic explanation)
10. Classification (B&K, Ch. 2 part on classification: The biology of race, pp. 40-42; Paper from Hacking on looping effects)

III. Contemporary issues about science and society

11. Objectivity (Paper from Daston or Porter)
12. Joker (e.g. post-truth, science skepticism, agnotology, bias, etc) - Film "The Merchants of Doubt" (2014)

Readings

Introduction to the philosophy of science:

- [B&K] Barker, G., & Kitcher, P. 2013. *Philosophy of science: A new introduction.* Oxford: Oxford University Press. [**Required reading for Part I**]

Collections of classical and contemporary readings

- McGrew, T., Alspector-Kelly, M. and Allhoff, F. 2009. *Philosophy of Science: An Historical Anthology*, John Wiley & Sons.
- Biagioli, M. 1999. *The science studies reader*. New York: Routledge
- Bird, A. & J. Ladyman. 2013. *Arguing about Science*. London; New York: Routledge.
- Curd, M. & J. A Cover. 1998. *Philosophy of Science: The Central Issues*. New York: W.W. Norton & Co.
- Psillos, S., & M.Curd. 2008. *The Routledge Companion to Philosophy of Science*. London ; New York: Routledge.

As **background reference** material students shall use the following:

- Psillos, S. 2007. *Philosophy of Science A-Z*. Edinburgh: Edinburgh University Press.
- The *Stanford Encyclopedia of Philosophy* is usually the best encyclopedia when philosophy of science is at issue and it is open access.

Core readings mentioned above

Daston, L. 1999. Objectivity and the escape from perspective. In: Biagioli, M. *The science studies reader*, pp. 110-123, New York, Routledge.

Hacking, I. 1986. Making up people. In Heller, T., Sosna, M., and Wellbery, D. (eds) *Reconstructing Individualism: Autonomy, indivdiuality and the self in Western thought*, Stanford, CA, Stanford University Press, pp. 222–236.

Haslanger, S. 2014. The Normal, the Natural and the Good: Generics and Ideology. *Politica & Società: Periodico Di Filosofia Politica E Studi Sociali* 3: 365–92.

Machamer, P., L. Darden & C. Craver. 2000. Thinking about Mechanisms. *Philosophy of Science* 67: 1-25.

Porter, T. 1999. Quantification and the accounting ideal in science. In: Biagioli, M. (1999) *The science studies reader*, pp. 394-606, New York, Routledge.

Further references will be provided in class, related to specific topics.

GENERAL RULES: PARTICIPATION, PRESENTATIONS, WRITTEN ASSIGNMENTS

Maria Kronfeldner

Interaction in class should be based on mutual reliability and mutual respect and should result in a fair and open intellectual exchange.

Participation

- Students are required to **attend classes regularly**.
- Students should **participate actively in seminar discussions**.
- Students have to **prepare the required reading** for the course.
- They have to **be able to ask questions** and **make comments on the required reading** and
- **respond to the presentations** of other student.

Presentations should

- include the **reconstruction of the main arguments of the text** and
- **interpretative remarks** or
- **substantial research questions** for discussion.
- If asked, students also have to **exhibit research skills** (e.g. referring to further literature regarding the topic).
- Students are expected to **prepare and distribute a one-page handout** (strict limit!) that they distribute before their presentation. A multimedia presentation (e.g. powerpoint) is possible but is not replacing the handout. The tendency in recent years is to simply accumulate things, especially via powerpoint presentations. Yet, the art of thinking also consists in selecting the relevant from the irrelevant. This is why the handout is not allowed to be longer than 1 page!

Written assignments
Format and length of the written assignments varies. See course syllabus or specification on the e-learning site for this. If a longer term paper is assigned as an argumentative piece, this can be:

- either a careful **critical reconstruction** of a particular and important argument for a position,
- a **comparison** between competing arguments about alternative solutions to a problem,
- or a **defense of some particular position**/argument against some relevant criticism.

In all these cases, your own argumentation, your critical voice, should be a significant part of the paper. Rule of thumb for the ideal: 20/80 (20% retelling of what others said; 80% your own way of organizing and defending things).

I will **evaluate assignments** according to the criteria in the STUDENT RECORD MANUAL

CEU GRADING SYSTEM

GRADE	NAME	POINT	CREDIT
A	Outstanding	4.00	yes
A-	Excellent	3.67	yes
B+	Good	3.33	yes
B	Fair	3.00	yes
B-	Satisfactory	2.67	yes
C+	Minimum Pass	2.33	yes
F	Fail	0.00	no

EUROPEAN CREDIT TRANSFER SYSTEM GRADING SCALE

GRADE	STUDENTS*	DEFINITION	AT CEU
A	10%	Outstanding performance with minor errors	A
B	25%	Above the average standard but with some errors	A-/B+
C	30%	Generally sound work with a number of notable errors	B+/B
D	25%	Fair but with significant shortcomings	B/B-
E	10%	Performance meets the minimum criteria	C+
FX	-	Some more work required before the credit can be awarded	INC
F	-	Considerable further work is required	F

* Percentage of successful students normally achieving the grade

Feedback: Tests will be returned one or two weeks after taking it, with general feedback and the possibility to discuss questions regarding the results. I will comment on the content of student presentations during class. In case students like more feedback on their class performance, they can see me during office hours or after class. In response to written term paper work, students will receive a feedback sheet, which will translate the CEU grading system into philosophy specific criteria. See next page.

To stay up-to-date students need to regularly check the e-learning site of the course!

FEEDBACK-SHEET

Maria Kronfeldner

Seminar:
Piece:
Student ID/Name:

1. General evaluation

Grade (tendency):
(not necessarily the final grade)

2. Comparison to previous pieces (if applicable)

3. What you could improve

4. Further remarks

See also comments in your text.

SPECIFIC CRITERIA (Grade will result from scores on all criteria and also whether one is at the top or low end of a grade with respect to a specific criterion, which is not possible to represent in the grid, though)

A =4.00-3.68, A- =3.67-3.34; B+ =3.33-3.01; B =3.00-2.68; B- =2.67-2.34; C+= 2.33 (Minimum pass)

Research topic, argumentation and research skills	**A**	**A-**	**B+**	**B**	**B-**	**C+**	**C**
I. Does the paper have a precise, manageable, meaningful, independent and relevant substantial question, given its topic? Does it have a clear structure and upshot?							
II. Are the arguments precise, coherent and exhibiting argumentative depth?							
III. Are important concepts explicated?							
IV. Does the paper critically engage with the literature in an original way (e.g. anticipating counterarguments, developing an original organization of the material and/or argumentation)?							
V. Is there an indication for adequate comprehension of the relevant literature (incl. are the interpretations charitable)?							
VI. Is the paper mentioning relevant references, and is it clear who speaks (authorial voice)? Is there an indication of mastery of research techniques (e.g. have independently found sources been used)?							
Form and Presentation							
VII. Does the paper conform to the standards of academic writing? (quotations, layout, spelling, grammar, punctuation, word count mentioned, academic writing style, labeling of tables and figures, bibliography properly formatted and complete)							

Further rules for the 10-min presentations in class (PoS Class 2017)

The presentation should focus on an argumentation that you want to develop in your argumentative final essay (1000 words).

The handout (max. 1 page) should include your

a) name, ID-number,
b) the **topic/question** you want to address,
c) the **claim you want to make in one sentence,**
d) the **description of the argumentation you use,**
e) **references** used. To give evidence of your research skill you need to add at least one reference (one scholarly source or similarly relevant source) that you add to the material used in class.

Bold issues will be assessed.