Universitat Autònoma de Barcelona

2019/2020

Philosophy of Science

Code: 100312
ECTS Credits: 6

Degree	Type	Year	Semester
2500246 Philosophy	OB	3	1

Contact

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Use of Languages

Principal working language: spanish (spa)
Some groups entirely in English: No
Some groups entirely in Catalan: No
Some groups entirely in Spanish: No

Other comments on languages

The languages of this course are Spanish and English. The teacher understands some Catalan.

Prerequisites

Having completed a course in Logic.

Objectives and Contextualisation

In this course, students will learn to inquiry about the role of philosophical thought in science. The course includes (1) an introduction to the classical themes of the philosophy of science, such as the debate on realism and anti-realism, scientific explanation, the problem of induction, and the social impact of science as human activity; (2) an analysis of fundamental scientific concepts, such as time and space, causality, and laws of nature; (3) a reflection on the philosophical import of basic scientific theories such as relativity and quantum mechanics, and that of the special sciences, such as biology, psychology, and economics. Modern and contemporary works of science-fiction will also be used as support tools.

Competences

- Developing critical thinking and reasoning and communicating them effectively both in your own and other languages.
- Recognising the philosophical implications of the scientific knowledge.
- Respecting the diversity and plurality of ideas, people and situations.
- Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.

- Thinking in a critical and independent manner on the basis of the specific topics, debates and problems of philosophy, both historically and conceptually.
- Using the symbology and procedures of the formal sciences in the analysis and building of arguments.

Learning Outcomes

1. Ability to maintain an appropriate conversation.
2. Accurately using the specific lexicon of the history of philosophy.
3. Analysing historical cases about scientific facts.
4. Autonomously searching, selecting and processing information both from structured sources (databases, bibliographies, specialized magazines) and from across the network.
5. Correctly, accurately and clearly communicating the acquired philosophical knowledge in oral and written form.
6. Demonstrating a personal stance over a problem or controversy of philosophical nature, or a work of philosophical research.
7. Effectively communicating and applying the argumentative and textual processes to formal and scientific texts.
8. Engaging in debates about philosophical issues respecting the other participants' opinions.
9. Explaining aspects of the history of philosophy by using the discipline's specific terminology.
10. Explaining the specific notions of the History of Philosophy.
11. Formulating arguments for and against an issue, using proper vocabulary, conceptual precision and argumentative coherence.
12. Judging the moral impact of new technological developments on humans.
13. Mastering the relevant languages to the necessary degree in the professional practice.
14. Reading thoroughly historical texts of the history of science.
15. Relating elements and factors involved in the development of scientific processes.
16. Rigorously building philosophical arguments.
17. Specifying the general impact of new technological developments on humans.
18. Using specialized knowledge acquired in an interdisciplinary context when debating.

Content

The course is divided into two sections. The firs, more introductury one contains:

- the relationship between belief, knowledge, and science
- the concept of scientific theory
- deduction, induction, and abduction
- ordinary, scientific and philosophical explanation
- the social impact of science and current antiscientific tendencies

The second section section will be about:

- space, time, and space-time
- the theory of relativity
- quantum physics
- causality
- the laws of nature
- the relationship between basic science and special sciences

Methodology

The classes will consist of lecture parts and discussion parts. Students will have to read a text every week or two and send (by email or Virtual Campus, the way will be established in the first lessons) questions to the teacher, who will use them in the next class. At the end of the first and second section, students will have to form small groups and present and defend one of the arguments presented in class.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
12 classes on the first section	18	0.72	3, 4, 5, 16, 18, 6, 13, 9, 10, 7, 11, 12, 14, 1, 8, 17, 15, 2
12 classes on the second section	18	0.72	3, 4, 5, 16, 18, 6, 13, 9, 10, 7, 11, 12, 14, 1, 8, 17, 15, 2
Type: Supervised			
2 classes of discussion concerning the topics of the first section	3	0.12	3, 4, 5, 16, 18, 6, 13, 9, 10, 7, 11, 12, 1, 8, 17, 15, 2
4 classes of presentation and general discussion on the second section	6	0.24	3, 4, 5, 16, 18, 6, 13, 9, 10, 7, 11, 12, 14, 1, 8, 15, 2
Type: Autonomous			
Readings of texts and preparation of the questions for the next class	30	1.2	4, 5, 18, 6, 9, 7, 11, 14, 1, 8, 15, 2
Study of the concepts presented in class and preparation of presentations	50	2	3, 4, 5, 16, 18, 6, 13, 9, 10, 7, 11, 12, 14, 1, 8, 17, 15, 2

Assessment

The course evaluation presupposes attendance. The evaluation will consist of three elements. (1) Each student must send two questions to the teacher about each mandatory text. The questions have to show what the student has understood the text. (2) Discussion of an argument presented in the first section of the course. Each student has to join with other students in a small group and produce a hand-out to discuss the chosen argument. (3) Presentation of an argument encoutered in the second section of the course. Each student has to be join with other students in a small group and produce a presentation (with slides, or hand-out) of the chosen argument.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Discussion of an argument from the first section of the course	40%	5	0.2	3, 4, 5, 16, 18, 6, 13, 9, 10, 7, 11, 14, 1, 8, 15, 2
Discussion of an argument from the second section of the course	40%	10	0.4	3, 4, 5, 16, 18, 6, 13, 9, 10, 7, 11, 14, 1, 8, 15, 2
Sending of questions about the obligatory readings.	20%	10	0.4	4, 5, 6, 9, 7, 11, 12, 14, 17, 2

Bibliography

A complete bibliography will be given at the beginning of the course (Campus Virtual).

Casetta E. y Torrengo G. (2014) "Science" in T. Andina (ed.) *Bridging the Analytical Divide.*

- *A Companion to Contemporary Western Philosophy*, Leiden-Boston, Brill: 177-205
- Díez J.A. and Moulines C.U. (1997) *Fundamentos del filosofìa de la ciencia*, Barcelona, Ariel
- Ney A. (2014) *Metaphysics. An Introduction*, New York, Routledge
- Van Fraassen, B. C. (1980). *The scientific image*. Oxford University Press.