Universitat Autònoma de Barcelona

2022/2023

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: catalan (cat)
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 Catalan and English. The teacher can use Spanish when necessary.

Prerequisites

There are no prerequisites.

Objectives and Contextualisation

In this course students will learn to reflect on some of the basic questions of the Philosophy of Science, and to identify some of the main approaches to the discipline. The course starts from a reflection on the nature of science and its limits, and then delves into some classic discussions, such as those relating to the problem of induction, the demarcation criterion, the nature of scientific change, to the nature of scientific explanation, realism and anti-realism, and the human impact of science and its relationship to ethics and politics. These discussions are illustrated using examples from sciences such as physics, biology, psychology and sociology, also seeking to offer some insight into some particular sciences and their relevant contributions to philosophy. At the same time, the foundations will be laid for a brief history of some classical positions in the Philosophy of Science, a picture which will be completed and revised during the last part of the course.

Competences

- Act within one's own area of knowledge, evaluating sex/gender-based inequalities.
- Recognising and interpreting topics and problems of philosophy in its various disciplines.
- Recognising the philosophical implications of the scientific knowledge.
- 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 develop the necessary learning skills to undertake further training with a high degree of autonomy.
- 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.

- 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. Analysing historical cases about scientific facts.
3. Autonomously searching, selecting and processing information both from structured sources (databases, bibliographies, specialized magazines) and from across the network.
4. Correctly, accurately and clearly communicating the acquired philosophical knowledge in oral and written form.
5. Effectively communicating and applying the argumentative and textual processes to formal and scientific texts.
6. Engaging in debates about philosophical issues respecting the other participants' opinions.
7. Explaining aspects of the history of philosophy by using the discipline's specific terminology.
8. Explaining the philosophical importance of contemporary science and its implementation area.
9. Explaining the specific notions of the History of Philosophy.
10. Expressing both orally and in written form, the complex concepts of the analysis and scientific methodologies.
11. Formulating arguments for and against an issue, using proper vocabulary, conceptual precision and argumentative coherence.
12. Indicating and summarising the common content of several manifestations of various fields of culture.
13. Judging the moral impact of new technological developments on humans.
14. Leading working groups, overseeing collective tasks and working with commitment in order to bring together various positions.
15. Reading thoroughly historical texts of the history of science.
16. Relating elements and factors involved in the development of scientific processes.
17. Rigorously building philosophical arguments.
18. Specifying the general impact of new technological developments on humans.
19. Using specialized knowledge acquired in an interdisciplinary context when debating.

Content

The course is divided into two parts.

In the first part, we approach some fundamental problems in Philosophy of Science.

- What is science, and how can it be distinguished from what isn't?

- How is valid scientific knowledge acquired? The problem of induction.

- What is the purpose of science, and what does count as a "good" scientific explanation?

- What is the nature of scientific change?

In the second part, we reconstruct a short history of the key contributions to the discipline, and address one last key problem: that of the social impact of science.

- The notion of science from antiquity to modernity.

- From positivism to logical positivism and its critics.

- Historicist approaches to Philosophy of Science.

- Recent developments. From Constructive Empiricism to Science and Technology Studies.

Methodology

Classes for both parts of the course will consist of lessons where participation will be encouraged with questions and discussions. Students will be required to read a text each week between classes and email the teacher a question about the text. At the end of each part's classes, students will be required to form discussion groups. After the discussion sessions, there will be a written exam in class (online or face-to-face) with questions of various options and open.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
8 classes on the first part	12	0.48	3, 17, 7, 9, 5, 11, 13, 15, 1, 18
8 classes on the second part	12	0.48	3, 17, 7, 9, 5, 11, 13, 15, 1, 18
Type: Supervised			
1 class of evaluation activity on the first part of the course	1.5	0.06	3, 17, 7, 9, 5, 11, 13, 15, 1, 18
1 class of evaluation activity on the second part of the course	1.5	0.06	
6 classes of discussion group over the themes of the second part	9	0.36	3, 17, 7, 9, 5, 11, 13, 15, 1
6 classes of discussion groups on the topics of the first part	9	0.36	3, 17, 7, 9, 5, 11, 13, 1, 18
Type: Autonomous			
Readings of texts and preparation of the questions for the next class	30	1.2	3, 7, 5, 11, 15, 1
Study of the concepts presented in class and preparation of presentations	50	2	3, 17, 7, 9, 5, 11, 13, 15, 1, 18

Assessment

The evaluation will consist of three elements.

(1) The questions. Students must send a question to the teacher before the class corresponding to each text / group of texts that are compulsory reading (there will be 7 for each part of the course). The questions should show that the student has read and understood the text. The contribution of each of the two sets of questions (one for the first part and one for the second part of the course) is a maximum of 1 point (2 points in total). To get the point, students can be delayed five times at most (first and second part of the course), and must submit questions that they have not delivered on time before the written exam of the corresponding part. After the written exam, the teacher will communicate the assessment: 0 to the students who have not sent at least 6 of the 7 questions according to the modalities described; 1 to whom he has sent at least 6 of the 7 questions according to the modalities described, and whether the questions show a deep understanding; 0.5 if the questions have been answered validly but insufficiently.

(2) and (3) Written exams on the first and second part of the course. At the end of each part of the course there will be a written exam (multiple choice and open-ended questions). Each exam will be assessed from 0 to 8+.

In order to take the written exam, each student must have actively participated (online or in person, depending on the situation of the pandemic) in the discussion groups in at least one of the six classes before the test. Otherwise they will receive a one point penalty on the exam mark.

FINAL EVALUATION. There is no final synthesis test. The assessment score is 0 to 2 points for the questions plus the average of the two written exams (8 at most).

SECOND-CHANCE EVALUATION. To participate in the second-chance, students must have been previously assessed in a set of activities whose weight is equivalent to a minimum of 2/3 of the total grade. Therefore, only students who have takenboth written exams can participate in it. The second-chance test is a written exam with multiple choice and open-ended questions on the topics of both parties.

NOT EVALUABLE. The student will receive the grade of NE as long as he / she has not completed more than 30% of the assessment activities (an exam).

In the case that the student commits any irregularity that may lead to a significant variation in the grade of an assessment activity, this assessment activity will be graded with 0, regardless of the disciplinary process that may be carried out. In the event of several irregularities in the assessment activities of the same subject, the final grade for this subject will be 0.

In the event that the tests cannot be done in person, their format will be adapted (maintaining their weighting) tothe possibilitiesoffered by the UAB's virtual tools. Homework, activities and class participation will be done through forums, wikis and / or exercise discussions through Teams, etc. The teacher will ensure that the Student can access it or offer alternative means, which are within his / her reach.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Discussions and written exam on the first part of the course	40%	10	0.4	2, 12, 3, 4, 17, 19, 7, 8, 9, 10, 5, 11, 13, 14, 15, 1, 6, 18, 16
Discussions and written exam on the second part of the course	40%	10	0.4	2, 12, 3, 4, 17, 19, 7, 8, 9, 10, 5, 11, 13, 14, 15, 1, 6, 18, 16
Sending of questions about the obligatory readings.	20%	5	0.2	3, 7, 5, 11, 13, 15, 18

Bibliography

- *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
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- Longino, H. E. (1990). *Science as Social Knowledge: Values and Objectivity in Scientific Inquiry*. Princeton University Press.
- Kuhn, T. (1962). *La estructura de las revoluciones científicas.*
- Hempel, C. (1999). *Filosofía de la ciencia natural.* Alianza Editorial. Madrid.
- Hacking, I. (1998) *Representar e intervenir.* Paidós.
- Popper, K. (2008). La lógica de la investigación científica. Tecnos.
- Carnap, R. (1985). *Fundamentación lógica de la física.* Orbis.
- Wenceslao González (coord.). (2002). *Diversidad de la explicación causal.* Ariel.
- Van Fraassen, B. C. (1980). *The scientific image*. Oxford University Press.

Software

The subject does not require the use of any software, although a space will be opened in Google Classroom to share materials and doubts.