

Philosophy of Science

Code: 100312
ECTS Credits: 6

Degree	Type	Year	Semester
2500246 Philosophy	OB	3	1

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

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

There are no prerequisites.

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 parts, concerning the following themes.

First part.

- The problem of demarcation between science and non-science
- The problem of induction and of inductive knowledge in science
- The problem of explication and of the distinction between ordinary explanation and scientific explanation.

Secunda part:

- Realism and anti-realism in philosophy of science
- Causality and laws of nature
- Space and time

Methodology

The classes of both parts of the course will consist of lectures (either online or in presence, depending on the situation of the pandemic), in which participation with questions and discussions is encouraged. Students will have to read a text every week in between classes and send by email to the teacher 1 question about the text.

At the end of the classes of each part, students will have to form discussion groups. After the discussion sessions, there will be a written exam in class (either virtual or actual class) with multiple choices and open questions.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
8 classes on the first part	12	0.48	3, 4, 5, 16, 18, 6, 13, 9, 10, 7, 11, 12, 14, 1, 8, 17, 15, 2
8 classes on the second part	12	0.48	3, 4, 5, 16, 18, 6, 13, 9, 10, 7, 11, 12, 14, 1, 8, 17, 15, 2
Type: Supervised			
1 class of evaluation activity on the first part of the course	1.5	0.06	3, 4, 5, 16, 18, 6, 13, 9, 10, 7, 11, 12, 14, 1, 8, 17, 15, 2
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, 4, 5, 16, 18, 6, 13, 9, 10, 7, 11, 12, 14, 1, 8, 15, 2
6 classes of discussion groups on the topics of the first part	9	0.36	3, 4, 5, 16, 18, 6, 13, 9, 10, 7, 11, 12, 1, 8, 17, 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 evaluation will consist of three elements.

(1) The questions. Students have to send before each text / group of texts that are compulsory reading for a lesson (they will ask 7 for each part of the course) a question to the teacher. The questions must show that the student has 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 1 point maximum (then 2 points in total). Questions have to be submitted every week on time. In order to get the point, students can be delayed a few times as many times (first and second part of the course), and they have to send the questions that they have not submitted in time before the written exam of the corresponding part. There is a maximum of one question not sent for each part of the course. After the written exam the teacher will communicate the evaluation: 0 to the students who have not sent at least 6 of the 7 questions according to the described modalities. 1 to whom you have sent at least 6 of the 7 questions according to the modalities described and if the questions show an in-depth reading; 0.5 if the questions are shallow.

(2) and (3) Written exams on the first and second parts of the course. At the end of each part of the course you will take a written exam (open-ended and option questions). Each exam is rated from 0 to 8+. In order to

participate in 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. As active participation it is understood that the student has taken part to the presentation of the topic of discussion. Participation in discussion groups is waived for at most one of the two exams, but students who take the exam without prior active participation to a discussion group will have a penalty of one point (on the average of the two exams).

FINAL EVALUATION. There is no final proof of synthesis. The evaluation is calculated from 0 to 2 points for the questions plus the average of the two written exams (8 maximum; 7 if the student is penalized for not having participated in the discussion activities). Students who score a total of 10, and have taken 8+ on at least one of the two exams, can apply for the mention of honor.

SECOND-CHANCE EXAMINATION. To participate in the second-chance examination, the students must have previously been evaluated in a set of activities, the weight of which is equivalent to a minimum of 2/3 parts of the total grade. Then, only students who have taken the two written exams can participate in the second-chance examination. The second-chance examination is a written exam with multiple choice and open questions.

NOT EVALUABLE. The student will receive the grade of Non-evaluable as long as they have not submitted more than 30% of the evaluation activities (one exam).

NOTE BENE. In the event of a student committing any irregularity that may lead to a significant variation in the grade awarded to an assessment activity, the student will be given a zero for this activity, regardless of any disciplinary process that may take place. In the event of several irregularities in assessment activities of the same subject, the student will be given a zero as the final grade for this subject.

Assessment Activities

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

Bibliography

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- Khun T., (1962) *La estructura de las revoluciones científicas*
- Hempel, C., *Filosofía de la ciencia natural*, Alianza Editorial, Madrid
- Hacking, I., *Representar e intervenir*
- Popper, K., *La lógica de la investigación científica*, Tecnos, Madrid
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- Goodman, N. *Hecho, ficción y pronóstico*
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