

Degree programme	Type	Course
Science, Technology and Humanities	OB	3

Contact lecturer

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Teaching staff

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Group languages

You can consult this information at the [end](#) of the document.

Prerequisites

There are none.

Objectives

The main objective of the course is to understand the relationship between physics and other areas of contemporary humanistic thought, especially philosophy. To this end, we will analyse:

- 1) The foundations and implications of humanistic reasoning about physics.
- 2) The relevance of physical concepts and experiences for philosophical reasoning.
- 3) The limits and redefinition of the shifting boundaries between physics and humanistic thought.

Learning outcomes

1. Assess the reliability of sources, select important data and cross-check information.
2. Develop teamworking skills, blend in and actively collaborate in achieving common goals.
3. Present and interpret results from searches in bibliography and other important sources.
4. Recognise the fundamental concepts of special relativity and quantum mechanics and the historical context in which they appeared.

Contents

1. Absolute space and time
2. Relativistic space-time
3. From matter to mass-energy

4. From universal gravitation to the gravitational field
5. Quantum theory, indeterminism and measurement
6. Models and reality

Learning activities and methodology

Title	Hours	ECTS	Learning outcomes
Practical-theoretical lectures	16	0.64	1, 2, 3
Personal work	99	3.96	1, 3, 4
Lectures	33	1.32	1, 4

The presentations of the topics are complemented by the texts available in the Moodle Classroom. The folder of each topic contains the texts that we will discuss in the classroom practices, and additional texts or materials. In the descriptor of each topic we propose questions to guide the reading and analysis of the texts.

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.

Assessment

Continuous assessment activities

Title	Weight	Hours	ECTS	Learning outcomes
Review	30 %	0	0	1, 2, 3, 4
Exam	30 %	2	0.08	4
Essays	40 %	0	0	1, 3, 4

Essays

You have to submit through the Moodle Classroom, either individually or in groups of two, a minimum of 5 short texts (one page) within the indicated deadlines. You will discuss some of the questions we raise for each block, in relation to the proposed readings. We will grade the submissions through the Moodle Classroom.

Exam blocks 1 to 3

The exam will be based on the questions proposed in the Virtual Campus and will refer to the texts we will have analysed. You will have to identify and explain the significance of some of these texts. The exam is scheduled for week 8 of the semester.

Drawing up of a documentary record

The assessment of the 2nd part of the subject consists of the selection of a source relevant to the relationship between physics and contemporary thought and the elaboration of a document with a predetermined structure. The source can be of different types: archival source (letter, photograph, manuscript, memoir...); printed source; object or instrument; audiovisual source. You can prepare the document individually or in groups of two. The documentary record will be presented in the classroom.

Recovery

There will be a recovery test of the course, with a maximum total weight of 60%. In order to participate, you must have been evaluated in a set of activities the weight of which is equivalent to a minimum of two thirds of the total grade of the subject.

The student will be considered as non-assessable if he/she has not participated in all the assessment activities.

Single assessment

If you opt for the Single Assessment, you will have to submit the hand-outs and the review on the same day you take the exam corresponding to themes 1 to 4. The weighting of these elements will be the same as that of the Continuous Assessment.

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.

This subject allows the use of AI technologies as an integral part of the submitted work, provided that the final result reflects a significant contribution from the student in terms of analysis and personal reflection. The student must clearly (i) identify which parts have been generated using AI technology; (ii) specify the tools used; and (iii) include a critical reflection on how these have influenced the process and final outcome of the activity. Lack of transparency regarding the use of AI in the assessed activity will be considered academic dishonesty; the corresponding grade may be lowered, or the work may even be awarded a zero.

In cases of greater infringement, more serious action may be taken.

Bibliography

- Agar, Jon (2012). [Science in the Twentieth Century and Beyond](#). Cambridge: Polity.
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- Cushing, James T. (1998). *Philosophical Concepts in Physics. The Historical Relation between Philosophy and Scientific Theories*. Cambridge: Cambridge University Press.
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- Huggett, Nick (1997). *Space from Zeno to Einstein. Classic readings with a Contemporary Commentary*. Cambridge, MA: The MIT Press.
- Kern, Stephen (1983). *The Culture of Time and Space, 1880-1918*. Cambridge, MA: Harvard University Press.
- Kojevnikov, Alexei (2020). [The Copenhagen network: the birth of quantum mechanics from a postdoctoral perspective](#). Cham: Springer. Ch. 6: Philosophical Wrangling.
- Price, Huw (1997). [Time's Arrow and Archimedes' Point: New Directions for the Physics of Time](#). New York: Oxford University Press.
- Schneider, Susan, ed. (2016). [Science Fiction and Philosophy: From Time Travel to Superintelligence](#). Hoboken: Wiley. Part V: Space and Time.
- Zalta, Edward N.; Nodelman, Uri, eds. [The Stanford Encyclopedia of Philosophy](#). Stanford: The Metaphysics Research Lab, Stanford University.

Software

No specific software is required.

Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this [link](#). To access the information, you will need to enter the course CODE

Type of teaching	Group	Language	Semester	Shift
(TE) Theory	1	Catalan	first semester	morning-mixed
(PAUL) Classroom practices	1	Catalan	first semester	morning-mixed