Universitat Autònoma de Barcelona

2021/2022

Philosophy of Science and Technology

Code: 106214
ECTS Credits: 6

Degree	Type	Year	Semester
2504235 Science, Technology and Humanities	FB	1	2

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: Yes

Teachers

David Jorge Casacuberta Sevilla

Prerequisites

There are none.

Objectives and Contextualisation

The goal of this subject is to be an introduction to the main debates in the philosophy of science and technology.

The first section revolves around five major debates that define a great part of the theoretical discussions in philosophy of science today. These are also five debates that characterize the evolution of this discipline since its beginnings in the twentieth century, when it separated from epistemology.

The goal of the second section is to provide tools in order to think critically about technology, and to put them in practice through the situated analysis of specific artefacts and technological systems. How to think philosophically about the material constitution of the worlds we inhabit? How does technology embody social relations, ideas and values? How does it materialize power relations and shapes forms of life?

Competences

- Identify the various philosophical, ethical and sociological conceptions of science and technology and recognise their evolution throughout history.
- Make critical use of digital tools and interpret specific documentary sources.
- Produce written papers and give effective oral presentations, adopting the appropriate register in different languages.
- 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 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.

Learning Outcomes

1. Construct philosophical arguments with rigour.
2. Correctly, accurately and clearly communicating the acquired philosophical knowledge in oral and written form.
3. Express ideas in specific vocabulary appropriate to the discipline.
4. Present the concepts specific to ethics apply and apply them to the problems of science and technology.
5. Present the concepts specific to the philosophy of technology.
6. Produce organised, correct discourse, oral and written, in the corresponding language.
7. Search for, select and manage information independently, both from structured sources (databases, bibliographies, specialist journals) and from the web.
8. Use digital tools to collect, classify, analyse and interpret significant data related to philosophy studies.

Content

SECTION A

A.1. Is the goal of science to describe reality?

We start from the characterization of Popper's scientific method, and his defense of realism, and we contrast it with Feyerabend's methodological anarchism and van Fraassen's instrumentalist approach.

A.2. Is there progress in science?

We contrast Popper's proposal that science progresses and brings us closer and closer to a definitive truth, with Kuhn's vision from history of science and how in his model of scientific revolution makes nonsensical to establish progress in science, realizing that there are simply paradigm shifts.

A.3. Does science have an ideology?

Is science a dispassionate search for truth or on the contrary is it just another social product and thus includes a whole series of ideological principles that indicate what makes sense to investigate and what not? Scientism, the idea that the only reliable knowledge is the scientific one is it a scientific proposition or on the contrary is it an ideology?

A.4. Are scientific categories objective?

When we affirm that two animals belong to the same species, we establish the neuronal bases of a mental illness or we affirm that the sex of a person is determined biologically, are we establishing purely objective categories or do they also include social principles and norms? Does science offer us an objective description of reality or is scientific knowledge socially constructed?

A.5. How do science and technology interact?

Many times technology is considered applied science. Scientific theory would be developed first and, once verified, various devices based on that scientific theory would be built. However, we can historically find cultures with a series of useful technologies that were the result of trial and error, without any scientific theory, and today we have many examples of technologies that make theoretical advances in science possible, from supercomputers to accelerators of particles. It is not so easy to establish the co-dependency between science and technology.

SECTION B

B.1. From ***episteme*** to science and from ***techné*** to technology

Departing from the history of the word "technology", we embark on a genealogy through some of the main historical conceptions of "episteme", "techné", "scientia", "ars", "science", "applied science" or "technoscience" in order to pose the question of the evolution of the relationships between theoretical and practical knowledge.

B.2. The question concerning technology: Fundamental debates in philosophy of technology

An introduction to some of the main debates about technology from the point of view of the philosophical tradition.

B.3. Design: The social shaping of technology

Departing from the debates about technological determinism and the autonomy of technology, we ask whether (and in what sense) technology is a social construction, as it is argued by the SCOT program in constructivist sociology of technology.

B.4. Interactions: The technological shaping of society

Departing from the debates about the degree of agency of technological objects and systems, we introduce the actor-network theory approach and reflect about notions such as "technical delegation" and "technical mediation".

B.5. Technopolitics: Materiality, power and forms of life

Departing from the debates about progress and the neutrality of technology we askwhether (and how) artifacts have politics.

Methodology

This subject combines theoretical classes with discussion in class. The first section will deal thematically with key current debates in the philosophy of science, that will also serve to make an overview of the main approaches within the discipline throughout the twentieth century. The second section will deal with one or several philosophical, historical or sociological perspectives about technology, that will always be discussed in relation to specific and situated tools, artefacts or technical systems. Further bibliographical references for each of the topics will be published in the campus virtual.

15 minutes in one of the sessions will be devoted to the teaching evaluation polls.

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			
Practical work at class	16	0.64	2, 1, 6, 4, 5, 3, 8
Theoretical classes	33	1.32	1, 4, 5, 3
Type: Supervised			
Office hours and supervision of essays	4.25	0.17	1, 6, 3
Type: Autonomous			
Autonomous study	86.75	3.47	7, 2, 1, 6, 4, 5, 3, 8

Assessment

The assessment will consist in:

A) Two partial exams (20% + 20%), one for each section. The format will be announced in due time.

B) Two written assignments (30% + 30%), one for each section. The format will be announced in due time.

In the event that tests or exams cannot be taken onsite, they will be adapted to an online format made available through the UAB's virtual tools (original weighting will be maintained). Homework, activities and class participation will be carried out through forums, wikis and/or discussion on Teams, etc. Lecturers will ensure that students are able to access these virtual tools, or will offer them feasible alternatives.

All assessment activities will have the opportunity to be revised, either presentially or virtually. On carrying out each evaluation activity, lecturers will inform students (on Moodle) of the procedures to be followed for reviewing all grades awarded, and the date on which such a review will take place.

To pass the subject through continuous assessment, an average minimum of 5 is required.

The student will be given the grade of "non-assessable" if less than 30% of the assessment activities are submitted.

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.

Reassessment:

For their admission to reassessment, students must have been previously assessed from a set of activities that are equivalent to a minimum of 2/3 parts of the whole qualification. The minimum average grade of the assessedactivities cannot be inferior to 3 nor higher than 5.

Re-assessment will consist in submitting again the assessment activities in which the student failed. The format will be announced with enough anticipation.

The teaching methodology and the evaluation proposed in the guide may undergo some modification subject to the onsite teaching restrictions imposed by health authorities. Any change related to assessment, methodology, etc., will appear at the Virtual Campus in due course.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Partial Exam Section A	20%	1.5	0.06	2, 1, 6, 4, 3
Partial Exam Section B	20%	1.5	0.06	2, 1, 6, 4, 5, 3
Written Essay Section A	30%	3.5	0.14	7, 2, 1, 6, 4, 3, 8
Written Essay Section B	30%	3.5	0.14	7, 2, 1, 6, 4, 5, 3, 8

Bibliography

Almazán, Adrián (2021). *Técnica y tecnología: Cómo conversar con un tecnolófilo*. Madrid: Taugenit.

Ásta (2018). *Categories We Live By: The Construction of Sex, Gender, Race, and Other Social Categories*. Oxford: Oxford University Press.

Casacuberta David (2021). *La era de Casandra. Una apología del no saber.* Bellaterra: Ediciones UAB.

Diez, José A. & Moulines, Ulises (2008). *Fundamentos de Filosofía de la Ciencia.* Barcelona: Ariel.

Echeverria, Javier (2003). *La revolución tecnocientífica.* Madrid: Fondo de Cultura Económica.

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Estany, Anna (2016). *Introducción a la filosofía de la ciencia.* Bellaterra: Ediciones UAB.

Feyerabend, Paul (2007). *Contra el método.* Madrid: Tecnos.

Kuhn, Thomas S. (2007). *L'estructura de les revolucions científiques*. Santa Coloma de Queralt: Obrador Edèndum.

Kuhn, Thomas S. (2016). *La estructura de las revoluciones científicas.* Madrid: Fondo de Cultura Económica.

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Perdomo, Inmaculada & Sánchez, Jesús (2013). *Hacia un nuevo empirismo: La propuesta filosófica de Bas C. Van Fraassen*. Madrid: Biblioteca Nueva.

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Suchman, Lucy (2006). *Human-Machine Reconfigurations: Plans and Situated Actions, 2nd Edition*. Cambridge: Cambridge University Press.

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Winner, Langdon (1987). *La ballena y el reactor: Una búsqueda de los límites en la era de la alta tecnología*. Barcelona: Gedisa.

Software

No specific software is required.