

Science in History

Code: 42279
ECTS Credits: 15

| Degree | Type | Year | Semester |
|--|------|------|----------|
| 4313223 History of Science: Science, History and Society | OB | 0 | 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)

Teachers

Agustí Nieto-Galan
Jorge Molero Mesa
Carlos Tabernero Holgado
José Pardo Tomás
Jon Arrizabalaga Valbuena
Oliver Hochadel
Maria Emilia Calvo
Carlos Dorce
Sergi Grau Torras

Prerequisites

There are none.

Objectives and Contextualisation

- To understand and characterize the major stages of the history of science, and the different views on the nature and social relations of science through history
- To communicate orally and in writing historical arguments
- To interpret, comment upon and edit scientific texts of the past and to be able to place them in their historical context

Competences

- Analyse the multiple approaches to science's past taken by different authors and schools, and make reasoned choices between them.
- Apply this discipline's own analysis methods and techniques in the construction of various historical narratives.

- Communicate and justify conclusions clearly and unambiguously to both specialised and non-specialised audiences.
- Develop an original, interdisciplinary historical narrative that integrates humanistic and scientific culture.
- Display a sound knowledge of history so as to pinpoint the great events of the past with accuracy: authors, theories, experiments, practices, etc., and their stages of stability and transformation.
- Display rigorous, advanced knowledge of the evolution of science throughout history.
- Gather and critically assess information for problem solving, in accordance with the discipline's own analysis methods and techniques.
- Interpret, comment on and edit scientific texts on science's past and place them rigorously within their historical context.
- Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.
- Use information and communication technologies appropriately in research and in professional activity.
- Work in interdisciplinary teams, showing leadership and initiative.
- Work independently: solving problems, taking decisions and making innovative proposals.

Learning Outcomes

1. Analyse in depth the role of scientific instruments, experiments and the material culture of science in general throughout history.
2. Assess the virtues and the limitations of the different history of science textbooks.
3. Communicate and justify conclusions clearly and unambiguously to both specialised and non-specialised audiences.
4. Construct a critical bibliography on a particular problem in the history of science, using databases and directories.
5. Critically analyse the different narratives of the great paradigms of science.
6. Display methodological habits in historical text commentary.
7. Distinguish the different approaches taken by text books aiming to present a global vision of the history of science.
8. Distinguish the historical moments of change, transformation and even revolution in scientific thought.
9. Distinguish the leading historians specialising in each of the major stages in the history of science.
10. Gather and critically assess information for problem solving, in accordance with the discipline's own analysis methods and techniques.
11. Identify and analyze the pertinent bibliography to expose the state of the question of a certain historiographic problem.
12. Identify areas of intersection between humanistic and scientific culture, such as the problem of science and religion, science and power, or science and technology.
13. Identify the great driving ideas of natural philosophy and modern science with their elements of change and continuity.
14. Identify the social and cultural factors that have influenced the development of science throughout history.
15. Integrate intellectual and material factors (internal and external) when developing a historical narrative of science.
16. Know the biographical profiles of the great scientists and natural philosophers of the past.
17. Recognise and identify in detail the great stages in the history of science, from antiquity to the 20th century.
18. Recognise the main aspects of ancient science medieval science, the science revolution, the science of the Illustration, the science of the 19th century and that of the 20th century.
19. Relate primary sources to the historical context in which they were written, disseminated and responded to.
20. Rigorously analyse any scientific theory throughout history.
21. Understand, contextualise and analyse the different primary and secondary sources with rigour.
22. Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.
23. Use footnotes when writing historical texts.
24. Use information and communication technologies appropriately in research and in professional activity.
25. Work in interdisciplinary teams, showing leadership and initiative.
26. Work independently: solving problems, taking decisions and making innovative proposals.

Content

1. Introduction: Science and History
2. Reading and writing seminar
3. Methodology seminar

Part 1. Science in Antiquity

4. The birth of science?
5. The natural philosophy of Aristotle
6. Astronomy and cosmology
7. Mathematics and Geometry
8. Ptolemy's science
9. Medicine and the Life Sciences

Part 2. Medieval Science

10. Medicine and science in the Middle Ages and the Renaissance
11. The establishment of a scientific corpus
12. The golden age of Arabic science
13. New institutions and translations
14. The transmission of knowledge

Part 3. The Scientific Revolution

15. The Copernican Revolution
16. Galileo and movement; Harvey and blood circulation
17. The reform of knowledge: Bacon and Descartes
18. Newton: The world system

Part 4. The Enlightenment

19. Actors and spaces of natural philosophy
20. The Chemical Revolution
21. The Encyclopedia and the crisis of the Enlightenment

Part 5. The Rise of Science

22. The Human Sciences
23. Evolution and laboratory medicine
24. The sciences of matter and energy

Part 6. Contemporary Science

25. Little Science, Big Science
26. Science in the Cold War
27. The molecular view of life

Oral Presentations and Synthesis

28. Oral presentations
29. Oral presentations
30. Oral presentations and conclusions

Methodology

This compulsory module offers an overview of the historical development of science, from antiquity to the twentieth century. The course is arranged by chronological blocks taught by lecturers who specialize in each of

the periods, and addresses both the different points of view about nature, as the social relations of science through history. It is a first approach to the development of science, technology and medicine over the centuries, which serves as a basis for further deepening into specific issues.

Activities

| Title | Hours | ECTS | Learning Outcomes |
|-------------------------|-------|------|---|
| Type: Directed | | | |
| Lectures | 93 | 3.72 | 20, 5, 1, 21, 16, 6, 7, 8, 9, 14, 12, 13, 15, 18, 17, 19, 22, 2 |
| Type: Supervised | | | |
| Methodological seminars | 6 | 0.24 | 4, 6, 3, 23 |
| Supervision of essays | 40 | 1.6 | 21, 6, 3, 10, 19, 26, 25, 24 |
| Type: Autonomous | | | |
| Reading and writing | 218 | 8.72 | 21, 4, 6, 9, 11, 15, 3, 10, 17, 19, 26, 24, 23, 2 |

Assessment

Essays

Based on the compulsory readings and presentations in class, students must submit four essays of 1200-1500 words (A1-A4). The essays will be submitted through the Aula Moodle, in the indicated periods.

Oral Presentation

At the end of the module, each student will make a 15 minute presentation dealing with a specific topic previously agreed with the course coordinator.

In the event that activities and 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.

Assessment Activities

| Title | Weighting | Hours | ECTS | Learning Outcomes |
|-----------------|-----------|-------|------|---|
| Essays A1-A2 | 40% | 6 | 0.24 | 20, 5, 1, 21, 4, 16, 6, 7, 8, 9, 14, 12, 11, 13, 15, 3, 10, 18, 17, 19, 22, 26, 24, 23, 2 |
| Essays A3-A4 | 40% | 6 | 0.24 | 20, 5, 1, 21, 4, 16, 6, 7, 8, 9, 14, 12, 11, 13, 15, 3, 10, 18, 17, 19, 22, 26, 24, 23, 2 |
| Presentation A5 | 20% | 6 | 0.24 | 3, 22, 25 |

Bibliography

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- Brunschwig, J.; Lloyd, Geoffrey (eds.), El saber griego. Madrid: Akal, 2000.
- Bynum, William F.; Porter, Roy, eds. Companion encyclopedia of the history of medicine. London: Routledge, 1993, 2 vols.
- Clark, W.; Golisnki, J.; Schaffer, S., eds. The Sciences in Enlightened Europe. Chicago/Londres: The University of Chicago Press, 1999.
- Dear, Peter. La revolución de las ciencias. El conocimiento europeo y sus expectativas, 1500-1700. Madrid: Marcial Pons, 2007.
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