

Major Issues of History of Science

Code: 42280

ECTS Credits: 15

Degree	Type	Year	Semester
4313223 History of Science: Science, History and Society	OT	0	1

Contact

Name: Jaume Sastre Juan

Email: Jaume.Sastre@uab.cat

Other comments on languages

There could be some session in Spanish and some session in English

Use of Languages

Principal working language: catalan (cat)

Teachers

Agustí Nieto-Galan

Jorge Molero Mesa

Jaume Sastre Juan

Miquel Carandell Baruzzi

Monica Balltondere Pla

External teachers

Antoni Malet (UPF)

Antoni Roca Rosell (UPC)

Daniele Cozzoli (UPF)

Emilia Calvo (UB)

Fernando Vidal (ICREA)

Jaume Valentines Álvarez (UNL)

Jesús Galech (UB)

Jon Arrizabalaga (CSIC)

Maria Rosa Massa (UPC)

Oliver Hochadel (CSIC)

Pepe Pardo (CSIC)

Prerequisites

It is a mandatory module in the research (academic) itinerary. It trains the students for the research modules (M5 + M9) of the second semester.

Objectives and Contextualisation

How to write the History of Science at the beginning of the 21st century? To answer this complex question, the module provides students with a critical approach to the different schools, themes and problems on which the history of science has been working as an academic discipline. It invites students to draw useful conclusions for their education as historians of science today. It is a *historiographical* module, in which plural views of a specific event in the past have priority over consensus -the latter being worked in module M1.

Competences

- Analyse the multiple approaches to science's past taken by different authors and schools, and make reasoned choices between them.
- Apply historical knowledge of science to communication, material culture and science teaching.
- Apply this discipline's own analysis methods and techniques in the construction of various historical narratives.
- 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.
- 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. "Identify areas of intersection between humanistic and scientific culture: science and religion; science and power; science and technology; science and gender."
2. Adopt knowledge advanced historiography science.
3. Analyse the historical dimension of a particular scientific theory from a cultural and social perspective.
4. Analyze a certain scientific theory in its historical dimension from a cultural and social perspective.
5. Construct a critical bibliography on a particular problem in the history of science, using databases and directories.
6. Correctly deconstruct footnotes when analysing the intellectual itinerary of a particular author in order to ascribe the author to a particular historiographic school.
7. Critically analyse the different schools of science historians that have arisen throughout in the 20th century: positivism, historicity, sociology.
8. Critically analyse the historical moments of change, transformation and even revolution in scientific thought.
9. Describe the great experiments in the history of science as seen in their historical context.
10. Develop various historical narrations (multiple approaches) of a single event in the science of the past.
11. Display methodological habits in commentaries on representative texts of the main historiographic schools .
12. Distinguish the great figures in the history of science as seen in their historical context.
13. Distinguish the main changes that have taken place in the history of science before and since the contribution of Thomas S. Kuhn.
14. Distinguish the recent historiographic trends that regard science as a cultural phenomenon of knowledge in transit.
15. Evaluate the contribution of the great paradigms the history of science: heliocentrism, geocentrism, creationism, evolutionism, etc.
16. Gather and critically assess information for problem solving, in accordance with the discipline's own analysis methods and techniques.

17. Integrate intellectual and material factors (internal and external) when developing a historical narrative of science.
18. Integrate new primary sources (scientific instruments, spaces of scientific practice, machines, etc.) as agents of a new social and cultural history of science.
19. Place secondary sources within the historical context in which they were written, disseminated and responded to.
20. Present the state of the art of a particular historiographic problem by identifying and analysing the relevant literature.
21. Relate these new material sources to the traditional textual primary sources.
22. Rigorously contextualise and analyse the different secondary sources.
23. Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.
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.
27. Write critical analyses of representative works in the history of science.

Content

The course is organized in two blocks:

- A. Methodology and development of the discipline: introduces the student into the bibliography, approaches and research methodology in the history of science. It also provides an overview of the development of the discipline throughout the 20th century.
- B. Topics and problems: explores the relationship of science with certain issues and border problems, from a historiographic perspective.

A. METHODOLOGY AND DEVELOPMENT OF THE DISCIPLINE

- Presentation. The history of science as an academic discipline: historiographical introduction. Sources and databases.
- The origins of the history of science (I)
- The origins of the history of science (II)
- The first sociology
- Thomas Kuhn and the Cold War
- The cultural and sociological turn (I)
- The cultural and sociological turn (II)

B. THE HISTORY OF SCIENCE: THEMES AND PROBLEMS

- Big pictures
- Medicine
- Mathematics and engineering (I)
- Mathematics and engineering (II)
- Publics (I)
- Publics (II)

- Scientific instruments
- Rationality
- Global History
- Art
- The Scientific Revolution
- The Enlightenment
- Hispanic Monarchy
- Technology (I)
- Technology (II)
- Religion (I)
- Religion (II)
- Human Sciences
- Gender (I)
- Gender (II)
- Visual Studies (I)
- Visual Studies (II)

Methodology

The master classes of the professor prepare a set of readings that are discussed in presentations and debates at class.

The student prepares a historiographical essay during the module based on the weekly readings and debates, as well as his readings.

The autonomous secondary literature research also allows the student to get acquainted with the historiographical state of the art in the topics and problems of his interest in the history of science.

The student attends research seminars and writes critical reviews about them.

Activities

Title	Hours	ECTS	Learning Outcomes
<hr/>			
Type: Directed			
<hr/>			
Master classes	94	3.76	1, 8, 7, 15, 2, 9, 10, 13, 12, 3, 17, 16
<hr/>			
Type: Supervised			
<hr/>			
Oral presentations and mentoring	46	1.84	1, 8, 7, 15, 5, 2, 6, 9, 10, 13, 12, 20, 3, 17, 26, 25
<hr/>			

Type: Autonomous

Personal study, reading, analysis of articles and elaboration of written assignments	225	9	1, 8, 7, 15, 5, 2, 6, 9, 10, 13, 12, 20, 3, 17, 16, 26, 25, 24
--	-----	---	--

Assessment

The evaluation will consist in the following activities:

Activity	Weight
Elaboration of a historiographical essay (5000 words). The essay will analyze the work of a historian of science and his or her historiographical contribution. A list of eligible works is included in the bibliography.	50%
The essay must consist in the presentation of the author (500 words), a summary of the work (1000 words) and the description and discussion of its historiographical approach (3500 words). Once the historiographical approach has been analyzed, it must be critically compared to other approaches to the same topic (placing them in time): what are the implications of the historiographical approach? How does it build its object of study? What are the methodological issues involved? Etc.	
A model of an article will be provided so that it can set the style and format guidelines in the elaboration of the essay. Formal and linguistic correction will be evaluated.	
Supervision and evaluation: the coordinators of the module.	
Oral presentation of the book chosen for the historiographical essay. Brief presentation of the author, the main ideas, and the historiographical approach of the book.	20%
Evaluation: coordinators of the module.	
Presence and active participation at class. Presence at 80% of the classes is necessary. Otherwise it will be necessary to present a written commentary of the readings of the sessions that the student hasnot attended.	10%
2 reviews (1000 words each) of 2 history of science seminars or talks. This reviews must consist in a small summary of the seminar (200-300 words), the description of the historiographical approach of the author, and a critical analysis (what are the implications of the way in which the author deals with the topic).	20%
Having in mind the historiographical formation of the student, it is recommended to attend at least 4 seminars or talks during the semester.	
It is mandatory to consult the seminar program at Calendari ARBAN and to make a subscription to the e-mail list: hct-l@llistes.uab.cat https://llistes.uab.es:4443/mailman/listinfo/hct-l	
If case there were impediments to attend the seminars, it will be possible to use some of the conferences at the Videoteca ARBAN (it will have to be negotiated which ones).	
Evaluation: coordinators of the module	
If a student does not pass the activities, he or she can present a revised version at the end of the module. Oral presentations are not subject to this possibility.	

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Oral presentation	20%	2.5	0.1	4, 22, 6, 14, 18, 21, 26, 19, 24
Presence and discussion at class	10%	2.5	0.1	8, 7, 15, 5, 2, 10, 13, 14, 20, 3, 17, 23, 26
Seminar reviews	20%	2.5	0.1	7, 2, 14, 27, 16, 26
Writing of a historiographical essay	50%	2.5	0.1	1, 8, 15, 2, 11, 9, 12, 20, 3, 23, 25

Bibliography

DATABASE "HISTORY OF SCIENCE, TECHNOLOGY AND MEDICINE"

The UAB has a subscription to the database "History of Science, Technology and Medicine", which includes the bibliographic database of the journal ISIS and the History of Science Society (HSS). We have 4 simultaneous accesses. You can access from outside the campus in the following way:

- 1) Access the UAB Private Virtual Network <http://xpv.uab.cat/> using your NIU and password
- 2) Click on "Biblioteques" in order to access the website of the Library Services of the UAB
- 3) Search "History of Science and Technology" in the Catalog of the UAB. Among the results you will find:
History of science, technology, and medicine [Recurso electrónico]
- 4) Click on this reference and you will find the direct link to the database.

BIBLIOGRAPHY

The website of the History of Science Society (HSS) includes a very good bibliographical resource: [Reading the History of Western Science: A List of Good Places to Start](#)

DICTIONARIES, GUIDES, ANTOLOGIES AND ENCYCLOPEDIAS

BYNUM, William F. & Roy PORTER (eds.) (1993). *Companion Encyclopedia of the History of Medicine*. London: Routledge, 2 vols.

BYNUM, William F.; BYNUM, Helen (eds.) (2006). *Dictionary of Medical Biography*. Westport: Greenwood, 5 volumes.

GILLESPIE, Charles (ed.) (1970/90). *Dictionary of Scientific Biography*. New York: Charles Scribner's Sons.

HEILBRON, John L. (ed.) (2003). *The Oxford Companion to the History of Modern Science*. Oxford: Univ. Press.

BIAGIOLI, Mario (ed.) (1999). *The Science Studies Reader*. New York: Routledge.

HACKETT, Edward J. et al., eds., *The Handbook of Science and Technology Studies*, 3^a ed., Cambridge, MA: MIT Press.

HESSENBRUCH, Arne (ed.) (2000). *Reader's Guide to the History of Science*. London: Fitzroy Dearbou.

KRIGE, John; PESTRE, Dominique (eds.) (2003). *Companion to Science in the Twentieth Century*. Amsterdam: Harwood.

PATTON, Lydia (ed.) (2014). *Philosophy, Science, and History: A Guide and Reader*. New York: Routledge.

MAUSKOPF, Seymour; SCHMALTZ, Tad (eds.) (2012). *Integrating History and Philosophy of Science: Problems and Prospects*. Dordrecht: Springer.

OLBY, Robert; Geoffrey CANTOR; John CHRISTIE; Jonathan HODGE, eds. (1990) *Companion to the History of Modern Science*. London: Routledge.

The Cambridge History of Science. Cambridge: Cambridge University Press, 8 vols. [Disponible online].

PESTRE, Domique (ed.) (2015). *Histoire des sciences et des savoirs*. Paris: Seuil, 3 vols.

HISTORIOGRAPHY

Historiographic overviews are scarce. However, the following books might be useful as reference works:

DOEL, Ronald E., SÖDERQVIST, Thomas (2006). *The Historiography of Contemporary Science, Technology, and Medicine: Writing Recent Science*, London: Routledge.

GAVROGLU, Kostas (2007). *O Passado das Ciências como História*. Porto: Porto Editora.

GRAHAM, L. W. LEPEÑIES, P. WEINGART (eds.) (1987). *Functions and Uses of Disciplinary Histories*. Dordrecht: Springer.

GOLINSKI, Jan (1998). *Making Natural Knowledge. Constructivism and the History of Science*. Cambridge University Press.

HUISMAN, Frank; WARNER, John Harley (eds.) (2004). *Locating medical history. Stories and their meanings*. Baltimore: The Johns Hopkins University Press.

KRAGH, Helge (1989; 2007). *Introducción a la historia de la ciencia*. Barcelona: Crítica.

SOLÍS, Carlos (ed.) (1994). *Razones e intereses. La historia de la ciencia después de Kuhn*. Barcelona: Paidós.

SOLÍS, Carlos (ed.) (1998). *Alta tensión: historia, filosofía y sociología de la ciencia. Ensayos en honor de Thomas S. Kuhn*. Barcelona: Paidós.

BOOKS FOR THE HISTORIOGRAPHIC ESSAY

BIAGIOLI, Mario (1994). *Galileo, Courtier: The Practice of Science in the Culture of Absolutism*. Chicago: University of Chicago Press.

BOWLER, Peter, J. (1989). *Evolution: the history of an idea*. Berkeley: Berkeley University Press.

BUTTERFIELD, Herbert (1949). *The Origins of Modern Science, 1300-1800*. London: Bell.

CAÑIZARES ESGUERRA, JORGE (2006). *Nature, Empire, and Nation: Explorations of the History of Science in the Iberian World*. Stanford: Stanford University Press.

EDGERTON, David (2007). *The Shock of the Old: Technology and Global History since 1900*. London: Profile Books. [Hi ha trad. espanyola: *Innovación y tradición. Historia de la tecnología moderna*. Barcelona: Crítica, 2007].

COOTER, Roger (1984). *The Cultural meaning of popular science: phrenology and the organization of consent in nineteenth-century Britain*. Cambridge: Cambridge University Press.

COWAN, Ruth Schwartz (1983). *More work for mother: The ironies of household technology from the open hearth to the microwave*. New York: Basic Books.

DASTON, Lorraine & GALISON, Peter (2007). *Objectivity*. New York: Zone Books.

FINDLEN, Paola (1994). *Possessing Nature: Museum Collecting and Scientific Culture in Early Modern Italy*. Berkeley: University of California Press.

GEISON, Gerald (1995). *The Private Science of Louis Pasteur*. Princeton: Princeton University Press.

HECHT, Gabrielle (2009) *The Radiance of France: Nuclear Power and National Identity after World War II*. Cambridge: MIT Press

HUFF, Toby E. (2003) *The Rise of Early Modern Science: Islam, China and the West*. Cambridge: Cambridge University Press.

KNIGHT, David (1992). *Ideas in Chemistry*. New Brunswick: Rutgers University Press.

LATOUR, Bruno; WOOLGAR, Steve (1986) *Laboratory Life: The Construction of Scientific Facts*. Princeton: Princeton University Press. [Hi ha trad. espanyola: *La vida en el laboratorio. La construcción de los hechos científicos*. Madrid: Alianza editorial, 1995].

LIVINGSTONE, David N. (2003). *Putting Science in its Place. Geographies of Scientific Knowledge*, Chicago: University of Chicago Press.

LLOYD, G. E. R. (1974 & 1975) *Early Greek Science: Thales to Aristotle and Greek Science After Aristotle*. New York: Norton.

MERCHANT, Carolyn (1980). *The death of nature: women ecology and the scientific revolution*. San Francisco: Harper.

NETZ, Reviel (1999). *The Shaping of Deduction in Greek Mathematics: A Study in Cognitive History*. Cambridge: Cambridge University Press.

PICKSTONE, John V. (2000). *Ways of Knowing. A New History of Science, Technology and Medicine*. Manchester: Manchester University Press.

PORTER, Roy (1988). *A Social History of Madness: The World through the Eyes of the Insane*. New York: Weidenfeld and Nicolson.

PORTER, Theodore M. (1985). *The Rise of Statistical Thinking, 1820-1900*. Princeton University Press. Princeton.

RAJ, Kapil (2008). *Relocating Modern Science: Circulation and the Construction of Knowledge in South Asia and Europe, 1650-1900*. Basingstoke: Palgrave Macmillan.

ROSSI, Paolo (1965). *Los Filósofos y las máquinas, 1400-1700*. Barcelona: Labor.

SHAPIN, Steven (1996). *The Scientific Revolution*. Chicago: University of Chicago Press. [Hi ha trad. espanyola: *La revolución científica. Una interpretación alternativa*. Barcelona: Paidós, 2000].

SCHIEBINGER, Londa (1989). *The Mind Has No Sex?: Women in the Origins of Modern Science*. Cambridge: Harvard University Press.