

**From Frankenstein to Einstein: Contemporary
Science and Society**

Code: 42286
ECTS Credits: 15

Degree	Type	Year	Semester
4313223 History of Science: Science, History and Society	OT	0	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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Other comments on languages

Llengua majoritària de les lectures del mòdul.

Use of Languages

Principal working language: catalan (cat)

Teachers

Agustí Nieto-Galan

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Tatiana Kasperski Tatiana

Gemma Cirac Claveras

Sergi Grau Torras

Prerequisites

There are none.

Objectives and Contextualisation

- To understand and critically analyze the role of science and technology in the configuration of contemporary society.
- To identify the different forms that contemporary science has taken, considering its aims, practitioners, educational institutions.
- To know the relevant literature on these issues.
- To communicate orally and in writing scientific and historical arguments.

Competences

- Analyse the multiple approaches to science's past taken by different authors and schools, and make reasoned choices between them.
- 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.
- Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.
- Work in interdisciplinary teams, showing leadership and initiative.
- Work independently: solving problems, taking decisions and making innovative proposals.

Learning Outcomes

1. Analyse in depth, from the global perspective of the module, transformative contributions such as evolution or relativity, offering an up-to-date reading in line with recent historiography.
2. Analyse particular cases of construction of the public image of science and its cultural and symbolic value.
3. Analyse the transformation, over the last century, of relations between experts and non-experts in the field of science, with regard to the legal and political dimension of these relations.
4. Connect the studies and debates on contemporary science and technology to those of political, cultural, economic and environmental history.
5. Contextualise the main historiographic debates on science and technology in the contemporary period.
6. Discuss how the boundaries between disciplines in science are marked out and maintained and the relationship with technology and other areas of human activity, such as philosophy or literature.
7. Distinguish the forms adopted by scientific activity throughout this period, both from the institutional and from the social and economic perspectives.
8. Explain the most significant changes in the different branches of scientific knowledge in the contemporary period.
9. Gather and critically assess information for problem solving, in accordance with the discipline's own analysis methods and techniques.
10. Identify and distinguish the changes that have taken place in the last two centuries in the ways scientific knowledge is produced, especially the role of the State as a patron and protector of scientific activity.
11. Recognise the specific contribution and role of industry and technology in the evolution of science, and vice versa.
12. Recognise the ways in which the changes in the relations between science, the state and industry have been reflected or enacted in the public arena and in the different artistic and communicative formats.
13. Reflect on narrative modes and the critical use of sources in the history of contemporary science and technology.
14. Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.
15. Work in interdisciplinary teams, showing leadership and initiative.
16. Work independently: solving problems, taking decisions and making innovative proposals.

Content

1. Presentació. Els orígens moderns de la ciència
2. *Frankenstein, or the Modern Prometheus*
3. *The Great Devonian Controversy*
4. *The Pasteurization of France*
5. Ciència, nacionalisme i internacionalisme
6. Natural-artificial: del laboratori a la indústria
7. Ciència i feixisme (I): De Mussolini a Hitler
8. Ciència i feixisme (II): Franco
9. Marie Curie: ciència, medicina i indústria
10. Einstein, l'espai-temps i l'Univers

11. Museus, tecnologia i poder
12. Ciència, tecnologia i fronteres: la "fortalesa Europa"
13. Ciència i descolonització
14. El complex militar-industrial a la Guerra Freda
15. *Science, Technology and Power in the Soviet Union*
16. *The Shock of the Old*
17. *The Two Cultures*
18. *Fear and Fun: Nuclear Culture, Emotions and Banalization*
19. Partícules elementals i cosmologia
20. Ciències de l'espai a la Guerra Freda
21. *In Science We (Dis)Trust*
22. John von Neumann i les ciències de la computació
23. Epistemologia de la pràctica científica contemporània
24. El gir ambiental: Rachel Carson
25. Dades, política i canvi climàtic
26. Paleoantropologia a l'esfera pública
27. Vida i intel·ligència artificials
28. Ciència i arts contemporànies
29. *Small Science*
30. Conclusions

Methodology

The module combines lectures in seminar format with the student autonomous, directed work (reading and analysis of texts).

The lectures will consist of an introduction by the lecturer, followed by the presentation by the students of the texts proposed for the session, and the discussion and comment of these readings.

Readings will be available on the UAB Virtual Campus.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Lectures	93	3.72	1, 3, 2, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14
Type: Supervised			
Supervision of essays	40	1.6	1, 3, 2, 4, 5, 6, 7, 8, 10, 9, 11, 12, 13, 14, 16, 15
Type: Autonomous			
Student work	212	8.48	9, 14, 16

Assessment

The module will be evaluated on the basis of 5 short essays (one every six sessions), with a weight of 15% each and addressed to different lecturers; and 2 oral presentations. The final grade will be the average of the grades obtained in the different activities.

The essays will have an extension of 1200 words and will be presented through the Campus Virtual, within the indicated deadlines. The essays will be evaluated in two weeks, and the student will receive the feedback through the same Campus Virtual.

The presentations will be prepared in advance and delivered in the corresponding session. The student will base the presentation on the session's readings.

In order to be evaluated, all essays and presentation must be done. If a student does not pass one of the

essays, he or she can present a revised version at the end of the module. Oral presentations are not to be revised.

Any additional indication will be provided through the Campous Virtual, which is the primary tool for communication and file sharing of the module.

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
Essay 1	15%	4	0.16	1, 3, 2, 4, 5, 6, 7, 8, 10, 9, 11, 12, 13, 14, 16, 15
Essay 2	15%	4	0.16	1, 3, 2, 4, 5, 6, 7, 8, 10, 9, 11, 12, 13, 14, 16, 15
Essay 3	15%	4	0.16	1, 3, 2, 4, 5, 6, 7, 8, 10, 9, 11, 12, 13, 14, 16, 15
Essay 4	15%	4	0.16	1, 3, 2, 4, 5, 6, 7, 8, 10, 9, 11, 12, 13, 14, 16, 15
Essay 5	15%	4	0.16	1, 3, 2, 4, 5, 6, 7, 8, 10, 9, 11, 12, 13, 14, 16, 15
Presentation 1	12,5%	5	0.2	1, 3, 2, 4, 5, 6, 7, 8, 10, 9, 11, 12, 13, 14, 16, 15
Presentation 2	12,5%	5	0.2	1, 3, 2, 4, 5, 6, 7, 8, 10, 9, 11, 12, 13, 14, 16, 15

Bibliography

- Agar, Jon (2012). *Science in the Twentieth Century and Beyond* (Cambridge: Polity). Online.
- Bijker, Wieber; Hughes, Thomas P.; Pinch, Trevor, eds. (1987). *The Social Construction of Technological Systems* (Cambridge, MA and London: The MIT Press).
- Bowler, Peter; Morus, Iwan Rhys (2005). *Making Modern Science* (Chicago: The University of Chicago Press). Trad. cast.: Panorama general de la ciencia moderna (Barcelona: Crítica, 2007).
- Collins, Harry; Pinch, Trevor (1993). *The Golem. What You Should Know about Science* (Cambridge: Cambridge University Press). Trad. cast.: El gólem. Lo que todos deberíamos saber acerca de la ciencia (Barcelona: Crítica, 1996).
- Collins, Harry; Pinch, Trevor (1998). *The Golem at Large. What You Should Know about Technology* (Cambridge: Cambridge University Press).
- Crow, Michael; Bozeman, Barry (1998). *Limited by Design: R & D Laboratories in the U.S. National Innovation System* (New York: Columbia University Press).
- Edgerton, David (2006). *Warfare State: Britain, 1920-1970* (Cambridge: Cambridge University Press).
- Edgerton, David (2006). *The Shock of the Old. Technology and Global History since 1900* (London: Profile Books). Trad. cast.: Innovación y tradición. Historia de la tecnología moderna (Barcelona: Crítica, 2007).
- Epstein, Steven (2007). *The Politics of Difference in Medical Research* (Chicago: The University of Chicago Press).
- Fara, Patricia (2009). *Science. A Four Thousand Year History* (Oxford: Oxford University Press). Trad. cast.: Breve historia de la ciencia (Barcelona: Ariel, 2009).
- Fox, Robert; Guagnini, Anna (1998). *Laboratories, workshops, and sites. Concepts and practices of research in industrial Europe, 1800-1914*. Special issue (1) of *Historical Studies in the Physical and Biological Sciences*, 29.
- Galison, Peter; Hevly, Bruce, eds. (1992). *Big Science. The Growth of Large-Scale Research* (Stanford: Stanford University Press).
- Glick, Thomas F. *Einstein y los españoles. Ciencia y sociedad en la España de entreguerras* (Madrid: Alianza, 1996; Madrid: CSIC, 2006).
- Hecht, Gabrielle (1998). *The Radiance of France: Nuclear Power and National Identity after World War II*

- (Cambridge, MA: The MIT Press).
- Hessenbruch, Arne, ed. (2000) *Reader's Guide to the History of Science* (London/Chicago: Fitzroy Dearbor Publishers).
- Harrison, Carol E.; Johnson, Ann eds. (2009). *National identity. The role of science and technology*. *Osiris*, 24.
- Joerges, Bernhard; Shinn, Terry, eds. (2001). *Instrumentation. Between Science, State and Industry* (Dordrecht: Kluwer).
- Kojevnikov, Alexei B. (2004). *Stalin's Great Science: The Times and Adventures of Soviet Physicists* (London: Imperial College Press).
- Krige, John (2006). *American Hegemony and the Postwar Reconstruction of Science in Europe* (Harvard, MA: The MIT Press).
- Krige, John; Pestre, Dominique, eds. (2003). *Companion to Science in the Twentieth Century* (Amsterdam: Harwood).
- Krige, John; Barth, Kai-Henrik eds. (2006). *Global Power Knowledge. Science and Technology in International Affairs*. *Osiris*, 21.
- Latour, Bruno (1988). *The Pasteurization of France*. Cambridge, MA and London: Harvard University Press. Trad. de *Les microbes : guerre et paix, suivi de irréductions* (Paris: Editions A. M. Métailié, 1984).
- Nye, Mary Jo (1996). *Before Big Science. The Pursuit of Modern Chemistry and Physics 1800-1940*. (Cambridge, MA: Harvard University Press).
- Pestre, Dominique (2003). *Science, argent et politique. Un essai d'interprétation* (Paris: INRA). Trad. cat.: *Ciència, diners i política* (Santa Coloma de Queralt: Obrador Edèndum; Publicacions URV, 2008); trad. cast.: *Ciencia, dinero y política* (Buenos Aires: Ediciones Nueva Visión, 2005).
- Pickstone, John V. (2000). *Ways of Knowing. A New History of Science, Technology and Medicine* (Manchester: Manchester University Press).
- Romero de Pablos, Ana; Santemas, María Jesús, eds. (2008). *Cien años de política científica en España* (Bilbao: Fundación BBVA).
- Rudwick, Martin J. S. (1985). *The Great Devonian Controversy. The Shaping of Scientific Knowledge among Gentlemanly Specialists* (Chicago and London: The University of Chicago Press).
- Sánchez Ron, José Manuel (2006). *El poder de la ciencia. Historia social, política y económica de la ciencia, siglos XIX y XX* (Barcelona: Crítica).
- Schaffer, Simon (2010). *Trabajos de cristal. Ensayos de historia de la ciencia, 1650-1900* (Madrid: Marcial Pons).
- Shelley, Mary (1818). *Frankenstein, or the Modern Prometheus*. London: Lackington, Hughes, Harding, Mavor & Jones. Hi ha nombroses edicions i traduccions.
- Turchetti, Simone; Roberts, Peder, eds. (2014). *The Surveillance Imperative. Geosciences During the Cold War and Beyond* (Basingstoke: Palgrave MacMillan).
- Wajcman, Judy (2004). *Technofeminism* (Cambridge: Polity). Trad. cast.: *El tecnofeminismo* (Madrid: Cátedra, 2006).
- Walker, Mark (2003). *Science and Ideology. A Comparative History* (London: Routledge).