

Material and Visual Culture of Science

Code: 106241
ECTS Credits: 6

Degree	Type	Year	Semester
2504235 Science, Technology and Humanities	OB	3	1

Contact

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Teaching groups languages

You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject. Please note that this information is provisional until 30 November 2023.

Teachers

Gladys Elena Serrano Jerez

Prerequisites

None.

Objectives and Contextualisation

The subject Material and Visual Culture of Science is part of the group of compulsory subjects within the Science, Technology and Culture subject.

The main objectives are:

Introduce the student to the consideration and experimentation of the material and visual culture of science, independently and in direct relation, identifying their points of convergence and hybridization, as vehicles for reflection/cultural construction, as instruments of research, scientific documentation and popularization, and as a pedagogical tool in the sciences and the humanities.

Within this specific field, give the student the necessary tools to identify and critically analyze the main historiographical and science and technology studies (STS) currents related to the material and visual culture of science.

Introduce the student to the analysis and knowledge of the processes of generation, circulation and management of scientific knowledge, as well as their role in sociocultural events throughout history, through the analysis of significant historical and sociological aspects taking into account geohistorical contexts, as well as fundamental aspects related to issues of race, class and, particularly, the gender dimension in scientific activity, with emphasis on the fields of research and education.

Introduce the student to the analysis of the role and situation of the sciences (in general and through specific case studies) and their social, political and cultural relationships today and throughout history. Consider the social, cultural, strategic and economic importance of science in society, as well as the importance of its study from humanistic perspectives. And thus, give the student the necessary tools to synthesize, from the historical development of the sciences (and the humanities), a perspective of the current and future scope of these knowledge construction and management processes, with special attention to the challenges current scientific, social, political and cultural issues, and the ethical and social issues they raise.

Competences

- Apply knowledge of ethics to science in society and gauge the impact of technological change on people and the human condition.
- Construct discourse on scientific and technical knowledge using the linguistic resources of argument.
- Develop and evaluate interdisciplinary projects that combine scientific, technological and humanistic knowledge and encourage citizens' involvement in matters related to science and technology in society.
- Innovate in the methods and processes of this area of knowledge in response to the needs and wishes of society.
- Make critical use of digital tools and interpret specific documentary sources.
- Recognise and interpret the elements that integrate the material and visual culture of science and technology into the different stages of its development.
- Recognise the political, social and cultural dimension of science and technology development in the different historical periods.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Work collaboratively in teams.

Learning Outcomes

1. Analyse the role of visual tools in the construction and circulation of scientific and technological knowledge and know-how.
2. Assess the reliability of sources, select important data and cross-check information.
3. Consider the development of audiovisual products on the subject of science in the public sphere.
4. Construct discourse tailored to the different formats for debating science in the public sphere.
5. Critically analyse the role of the transmission of scientific knowledge in a democratic society.
6. Describe and evaluate the narrative models and the rhetorical strategies behind scientific discourse of great social impact.
7. Describe the basic characteristics of important scientific objects in various areas of scientific research, popularisation and museography.
8. Develop a critical awareness of how scientific knowledge circulates and of its dynamic status between experts and non-experts.
9. Find and critically analyse sound sources for presenting science in different formats.
10. Formulate projects for science popularisation companies.
11. Formulate scientific museography projects.
12. Identify the aesthetic and artistic dimension of scientific culture.
13. Identify the various models for representing science and knowledge in the public sphere and suggest improvements to these.
14. Promote team spirit and the integration of others' points of view.
15. Recognise the presence in culture of the great scientific debates of the moment.

Content

The subject is structured in the following distributive blocks:

- A. Introduction
- B. Material culture of science.
- C. Visual culture of science.
- D. Conclusions and perspectives.

Methodology

The subject is based on a theoretical-practical methodology through theoretical expositions and debate sessions (guided learning exercises) on objects, spaces, bibliographic and audiovisual materials that are provided during the semester in class and through the virtual campus.

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			
Guided learning exercises	15	0.6	
Theory/discussion sessions amb ICT support	30	1.2	5, 1, 4, 6, 7, 8, 14, 12, 15
Type: Supervised			
Solving problems and tasks autonomously, participation in discussions	7.5	0.3	5, 1, 4, 6, 7, 8, 14, 13, 12, 9, 3, 10, 11, 15, 2
Type: Autonomous			
Independent study, use of bibliography, and task completion	90	3.6	5, 1, 4, 6, 7, 8, 14, 13, 12, 9, 3, 10, 11, 15, 2

Assessment

The evaluation of the subject is continuous in relation to active participation in class discussions, which will include:

- 4 short essays (300 words maximum) answering a specific question in each case, all corresponding to the material culture block, and which will be assigned during the semester (20% of the final grade).
- 1 final team presentation (30% of the final mark) in relation to a specific topic integrated into the contents corresponding to the material culture block.
- 1 brief individual essay (800 words maximum; 20% of the final mark) in relation to a specific topic integrated into the contents corresponding to the visual culture block.

- 1 final team written essay (3000 words maximum; 40% of the final mark) in relation to a specific topic integrated into the contents corresponding to the visual culture block.

With these evaluation activities, the students will have to demonstrate their ability to investigate, situate historically and critically analyze any problem related to the material and visual culture of science.

The final score will be the weighted sum (according to the indicated percentages) of the points obtained. For the evaluation to be effective, the student must pass each of the different tests separately.

Students who have not passed the subject may take a resit test similar to the single assessment (see below). To participate in the resit, the students must have been previously evaluated of the thematic blocks whose weight is equivalent to a minimum of two thirds of the total grade for the course. In addition, to participate in the resit, students must have obtained at least a 3.5 in the total grade for the subject.

The students who do not carry out the indicated evaluation tests will be considered as "Not evaluated", exhausting the rights to enroll in the subject.

Single evaluation

If necessary, a single evaluation test will be carried out for those students who, for justified reasons, cannot take the continuous assessment tests of the subject (short essays corresponding to the main blocks and participation in class debates).

This test will consist of the preparation, in person, at a date, time and classroom to be determined, of a brief final written essay (in this case 100% of the mark) in relation to a specific topic integrated into the contents and competences of the subject, and in which the student must demonstrate

his ability to historically situate and critically analyze any problem related to the material and visual culture of science. The teaching staff will assist students who require a single assessment with a specific tutorial related to each of the main blocks (material culture and visual culture).

The assessment will also include the delivery, the very same day, of two short essays (written previously; 30% of the mark each) about material and visual culture, respectively.

The students who take advantage of the single evaluation and who do not take the indicated test will be considered as "Not evaluated", exhausting the rights to enroll in the subject.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Final essay visual culture	30%	2	0.08	5, 1, 4, 6, 7, 8, 14, 13, 12, 9, 3, 10, 11, 15, 2
Material culture presentation	30%	2.5	0.1	4, 7, 8, 14, 9, 11, 15, 2
Short individual essay material culture 1-4	20%	2	0.08	4, 6, 7, 8, 11, 15, 2
Short individual essay visual culture	20%	1	0.04	5, 1, 4, 6, 8, 13, 12, 9, 3, 10, 15, 2

Bibliography

This is a short general bibliography of reference works. In class, the necessary sources for their development will be specified.

Cultura material

Bittel, Carla; Leong, Elaine; von Oertzen, Christine (eds.) 2019. *Working with Paper. Gendered Practices in the History of Knowledge*. Pittsburgh: University of Pittsburgh Press.

Daston, Lorraine (ed.). 2007. *Things that Talk. Object Lessons from Art and Science*. New York: Zone Books.

Guerrini, Anita, 2016. "The Material Turn in the History of Life Science". *Literature Compass* 13/7, 469-480.

Howes, David (ed.), 2005. *Empire of the Senses: The Sensual Culture Reader*. Oxford: Berg.

Roberts, Lissa; Schaffer, Simon; Dear Peter (eds.) 2007. *The Mindful Hand: Inquiry and Invention from the late Renaissance to early Industrialisation*. Amsterdam: KNAW.

Cultura visual

Berger, John. 1972/2008. *Ways of Seeing*. London: Penguin Modern Classics.

Bräuchler, Birgit; Postill, John (eds.) 2010. *Theorising Media as Practice*. Oxford / New York: Berghahn.

Bucchi, Massimiano; Trench, Brian (eds.) 2014. *Routledge Handbook of Public Communication of Science and Technology; Second edition*. London: Routledge.

Hentschel, Klaus. 2014. *Visual Cultures in Science and Technology*. Oxford: Oxford University Press.

Mirzoeff, Nicholas. 1999/2023. *An Introduction to Visual Culture*. London: Routledge / Psychology Press.

Thompson, John B. 1995. *The Media and Modernity. A Social Theory of Media*. Cambridge: Polity Press.

Weingart, Peter; Huppauf, Bernd. 2007. *Science Images and Popular Images of the Sciences*. London: Routledge, 2007.

Software

No specific software is required.