

From the Ancient to the Modern World through Islam: From the Closed World to the Infinite Universe

Code: 45758

Credits: 5

2026/2027

Degree programme	Type	Course
History of Science: History, Heritage and Scientific Communication	OP	1

Contact lecturer

Name : Jaume Sastre Juan

Email : jaume.sastre@uab.cat

Teaching staff (external to UAB)

Josep Casulleras Closa

Jesús Galech Amillano

Group languages

You can consult this information at the [end](#) of the document.

Prerequisites

There are none.

Objectives

The subject explores the history and practice of ancient astronomy, its transformation and application in Islamic societies and the legacy of these societies for European sciences, the mechanical philosophy and the experimental philosophy until the modern period, through different geographies, spaces, actors and instruments, as well as transversal issues such as gender, religion and colonialism.

Learning outcomes

- CA24 (Analyse the typological morphology of the different Arab astronomical instruments in order to compare them with European instruments of later times.) Analyse the typological morphology of the different Arab astronomical instruments in order to compare them with European instruments of later times.
- CA25 (Explain to specialised and non-specialised audiences the fundamental aspects of the relationship between science, philosophy and religion from the classical tradition and medieval Islamic societies to the modern era, as well as the problems of natural philosophy in this historical period.)

Explain to specialised and non-specialised audiences the fundamental aspects of the relationship between science, philosophy and religion from the classical tradition and medieval Islamic societies to the modern era, as well as the problems of natural philosophy in this historical period.

- CA26 (Explain to specialised and non-specialised audiences the dimensions of gender, race, class, materiality, and power in the history of astronomy from the classical tradition and medieval Islamic societies to the modern era.) Explain to specialised and non-specialised audiences the dimensions of gender, race, class, materiality, and power in the history of astronomy from the classical tradition and medieval Islamic societies to the modern era.
- KA24 (Describe the foundations of the history of astronomy from the classical tradition to the modern era, including the typological morphology that identifies the different Arabic astronomical instruments, as well as their connections with European instruments of later times.) Describe the foundations of the history of astronomy from the classical tradition to the modern era, including the typological morphology that identifies the different Arabic astronomical instruments, as well as their connections with European instruments of later times.
- KA25 (Describe the foundations of the history and problems of natural philosophy, science and technology from the classical tradition and medieval Islamic societies to the modern era, including the fundamental aspects of the relationship between science, philosophy and religion.) Describe the foundations of the history and problems of natural philosophy, science and technology from the classical tradition and medieval Islamic societies to the modern era, including the fundamental aspects of the relationship between science, philosophy and religion.
- KA26 (Rigorously define the dimensions of gender, race, class, materiality and power in the history of astronomy from the classical tradition and medieval Islamic societies to the modern era.) Rigorously define the dimensions of gender, race, class, materiality and power in the history of astronomy from the classical tradition and medieval Islamic societies to the modern era.
- SA22 (Identify the institutional and scientific role of medieval Islamic observatories and the practice of astronomy, incorporating the dimensions of gender, race, class, materiality and power.) Identify the institutional and scientific role of medieval Islamic observatories and the practice of astronomy, incorporating the dimensions of gender, race, class, materiality and power.
- SA23 (Critically and accurately interpret the origin and conceptual, technological and artistic evolution of medieval astronomical instruments, inserting them into their historical and social context.) Critically and accurately interpret the origin and conceptual, technological and artistic evolution of medieval astronomical instruments, inserting them into their historical and social context.
- SA24 (Identify the essential elements of the history of science, the problems of natural philosophy and the fundamental aspects of the relations between science, philosophy and religion from the classical tradition and medieval Islamic societies to the modern era.) Identify the essential elements of the history of science, the problems of natural philosophy and the fundamental aspects of the relations between science, philosophy and religion from the classical tradition and medieval Islamic societies to the modern era.

Contents

1. The activity of medieval astronomers: practical problems and theoretical research.
2. Useful astronomy: applications of astronomy in society.
3. The astrolabe: the medieval computer.
4. Touching the sky with our hands: workshop on building and using the astrolabe.
5. The astrolabe in astrology.
6. Fundamental practices of horoscopes: aspects, houses, and progressions.
7. The Catalan beginnings of scientific astronomy in Europe.
8. Astronomy and astrology in the 16th and 17th centuries.
9. Mechanical philosophy: ideas, machines, and clocks.

10. Experimental philosophy and mathematical physics.

Learning activities and methodology

Title	Hours	ECTS	Learning outcomes
Autonomous work	75	3	CA24, CA25, CA26, KA24, KA25, KA26, SA22, SA23, SA24
Classes and seminars	30	1.2	CA24, CA25, CA26, KA24, KA25, KA26, SA22, SA23, SA24
Exercises	20	0.8	CA24, CA25, CA26, KA24, KA25, KA26, SA22, SA23, SA24

The subject covers the medieval period until the modern period. The methodology combines the presentations by the teaching staff with the participation of students through the discussion of assigned readings and the resolution of exercises and practical cases.

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.

Assessment

Continuous assessment activities

Title	Weight	Hours	ECTS	Learning outcomes
Attendance and participation	20%	0	0	CA24, CA25, CA26, KA24, KA25, KA26, SA22, SA23, SA24
Essay 2	40%	0	0	CA24, CA25, CA26, KA24, KA25, KA26, SA22, SA23, SA24
Essay 1	40%	0	0	CA24, CA25, CA26, KA24, KA25, KA26, SA22, SA23, SA24

Assessment includes both the attendance and participation of the students and the completion of written exercises. These will be two essays of about 1,200 words each related to the contents of the subject and following the guidelines indicated by the teachers. One essay oriented to the medieval time period and the other to the 15th-17th centuries.

The following will be taken into account for the evaluation of the subject:

- Attendance and active participation in the completion of exercises and in the classroom discussion of the proposed readings; weight: 20%.
- 1 essay on medieval science; weight: 40%.
- 1 essay on Renaissance and modern science; weight: 40%.

This subject allows the use of AI technologies exclusively for support tasks such as bibliographic or content-based searches, text correction or translations, always under teachers approval. The student must clearly (i) identify which parts have been generated using AI technology; (ii) specify the tools used; and (iii) include a critical reflection on how these have influenced the process and final outcome of the activity. Lack of transparency regarding the use of AI in the assessed activity will be considered academic dishonesty; the corresponding grade may be lowered, or the work may even be awarded a zero. In cases of greater infringement, more serious action may be taken.

Bibliography

- CASULLERAS, J. La astrología de los matemáticos, Barcelona, 2010.
- CASULLERAS, J. & HOGENDIJK, H, «Progressions, rays and houses in medieval Islamic astrology: A mathematical classification», *Suhayl* 11 (Barcelona, 2012), pp. 33-102.
- GLICK, Th. et al. (eds.): *Medieval Science Technology and Medicine. An Encyclopedia*, Routledge, Nova York et al., 2005.
- GUTAS, D. *Greek Thought, Arabic Culture*, London-New York, 1998
- GUNTHER, R. *The Astrolabes of the World*. Oxford, 1932.
- KENNEDY, E.S. *Studies in the Islamic Exact Sciences*. Beirut, 1983.
- KING, D. (1987). *Islamic Astronomical Instruments*. London: Variorum Reprints, 1987.
- LIROLA, J. & PUERTA VÍLCHEZ, J.M. (eds.): *Biblioteca de al-Andalus*, Fundación Ibn Tufayl, Almería (2004 i ss., diversos vols).
- MICHEL, H. *Traité de l'astrolabe* . Paris, 1947.
- NORTH, J. *Horoscopes and History*, London, 1986.
- POULLE, E. *Les instruments astronomiques du Moyen Age*. Paris, 1983.
- RASHED, R. (ed.): *Encyclopedia of the History of Arabic Science*, 3 vols. London & New York, 1996.
- SALIBA, G. *Islamic Science and the Making of the European Renaissance*, MIT Press, Cambridge, Mass., and London, 2007.
- SAMSO, J.: *Las Ciencias de los Antiguos en al-Andalus*, Madrid, 1992.
- SAYILI, A. *The Observatory in Islam*. Ankara, 1988, 2a.ed.
- ULLMANN, M.: *Die Medizin im Islam*, E.J. Brill, Leiden et al., 1970; *Die Natur un Geheimwissenschaften im Islam*, Leiden et al., Brill, 1972.
- VERNET, J.: *La cultura hispanoárabe en Oriente y Occidente*, Barcelona, 1978 (Reedició amb el títol *Lo que la cultura europea debe a los árabes de España*, Barcelona, 1999.
- CATÀLEGS: *Instrumentos astronómicos en la España medieval* (1985) i *El legado científico andalusí* (1992).
- Beltrán, A., *Revolución científica, Renacimiento e historia de la ciencia*. Madrid: Siglo XXI, 1995.
- Biagioli, M., *Galileo Courtier. The Practice of Science in the Culture of Absolutism*. Chicago: The University of Chicago Press, 1993.
- Clavelin, M., *La philosophie naturelle de Galilée*. París: Albin Michel, 1996.
- Cohen, H. F., *The Scientific Revolution. A Historiographical Inquiry*. Chicago: The University of Chicago Press, 1994.
- Cohen, I. B., *La revolución newtoniana y la transformación de las ideas científicas*. Madrid: Alianza Editorial, 1983.
- Dear, P., *La revolución de las ciencias. El conocimiento europeo y sus expectativas, 1500-1700*. Madrid: Marcial Pons, 2007.
- Hall, A. R., *La Revolución Científica. 1500-1750*. Barcelona: Crítica, 1985.
- Henry, J., *The Scientific Revolutionand the Origins of Modern Science*. Londres: Macmillan, 2008.

Hetherington, N. S. (ed.), *Cosmology. Historical, Literary, Philosophical, Religious, and Scientific Perspectives*. Nueva York y Londres: Garland, 1993.

Kuhn, T. S., *La revolución copernicana*. Barcelona: Ariel, 1978.

Sellés, M., y Solís, C., *La Revolución científica*. Madrid: Síntesis, 1991.

Shapin, S., *La Revolución Científica. Una interpretación alternativa*. Barcelona: Paidós, 2000.

Shapin, S., y Schaffer, S., *Leviathan and the Air-Pump. Hobbes, Boyle and the Experimental Life*. Princeton: Princeton University Press, 1985.

Shea, W., *La magia de los números y el movimiento. La carrera científica de Descartes*. Madrid: Alianza Editorial, 1993.

Westfall, R. S., *Never at Rest. A Biography of Isaac Newton*. Cambridge: Cambridge University Press, 1980.

Westfall, R. S., *La construcción de la ciencia moderna. Mecanismo y mecánica*. Barcelona: Labor, 1980.

Software

Not required.

Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this [link](#). To access the information, you will need to enter the course CODE

Type of teaching	Group	Language	Semester	Shift
(TEm) Theory (master)	1	Catalan	second semester	afternoon