27224 - History of Science

Información del Plan Docente

Academic Year	2017/18
Faculty / School	100 - Facultad de Ciencias
Degree	452 - Degree in Chemistry
ECTS	3.0
Year	2
Semester	Second semester
Subject Type	Optional
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. It is focused on the application of basic knowledge on historical development of science and technology to case studies based on primary sources. A wide range of teaching and learning tasks are implemented, such as lectures, analysis of primary sources, assignments, and tutorials.

Students are expected to participate actively in the class throughout the semester.

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Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other learning resources such as synoptic tables, chronologies, maps, extended bibliography, and digital resources.

Further information regarding the course will be provided on the first day of class.

5.2.Learning tasks

The course includes 3 ECTS organized according to:

- Lectures (0,6 ECTS): 15 hours (classroom sessions).

- Practice sessions (0,6 ECTS): 15 hours (classroom sessions).

- Teacher-guided assignment (0,6 ECTS): 15 hours (small team activity and tutorials)

- Autonomous work (1,05 ECTS): 26,25 hours.

- Assessment (0,15 ECTS): 3,75 hours.

- Tutorials: 35,40 professor's office hours specifically devoted to the teacher-guided assignment.

1 ECTS= 25 hours students work

Lectures: Master lectures on history of science, 1 hour/week. Although lecture notes are available via Moodle, regular attendance is highly recommended.

Practice sessions: Teacher-guided Think-Pair-Share activity. Students work with historical texts (primary source-based learning), using textual analysis in order to develop the ability to identify and classify specific information from a text. Students are divided into two smaller groups, 1 hour/week for each group.

Teacher-guided assignment based on historical scientific texts: writing a team-based assignment (3 students/team) explaining events, procedures, ideas, concepts in a historical scientific text, including what happened and why.

Autonomous work: Students' autonomous study and individual contribution to the team-based assignment.

Assessment: Individual textual analysis (Moodle task and/or final exam).

5.3.Syllabus

The course will address the following topics:

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I. Science in the Ancient and Medieval World

1. The Origins of Rational Science: Technology and Philosophy
2. Materialism and Idealism
3. Ancient Knowledge of Matter: Alchemy, Technology, Medicine

II. The Birth of Modern Science

1. Scientific Revolution, Protestant Reformation and Early Capitalism
2. Pneumatic Chemistry (Hales, Black, Cavendish, Priestley, Scheele)

III. Science and Industry (19th-20th centuries)

1. Heat and Power
2. Engineering and Metallurgy
3. Electricity and Magnetism
4. Chemistry
5. Biology

5.4.Course planning and calendar

For further details concerning the timetable, classroom and further information regarding this course please refer to the "Facultad de Ciencias" website (http://ciencias.unizar.es/).

5.5.Bibliography and recommended resources

BB	Bernal, John D.. Historia social de la ciencia. Vol.1, La ciencia en la historia / John D. Bernal ; traducción de Juan Ramón Capella . - 6ª ed. Barcelona : Península, 1989
BB	Bernal, John D.. Historia social de la ciencia. Vol.2, La ciencia de nuestro tiempo / John D. Bernal ; traducción de Juan Ramón Capella . - 6ª ed. Barcelona : Península, 1991
BB	Companion to the history of modern science / edited by R.C. Olby ... [et al.] London and New York : Routledge, cop. 1990
BB	Ihde, Aaron J.. The development of modern chemistry / Aaron J. Ihde New York : Dover, cop. 1984
BB	Inkster, Ian. Science and technology in history : an approach to industrial development / Ian Inkster New Brunswick, New Jersey : Rutgers University Press, 1991

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BC	Bensaude-Vincent, Bernadette. A history of chemistry / Bernadette Bensaude-Vincent and Isabelle Stengers ; translated by Deborah van Dam Cambdridge [etc.] : Harvard University Press, 1996
BC	Bensaude-Vincent, Bernadette. Historia de la química / Bernardette Bensaude-Vincent, Isabelle Stengers ; versión en español de Encarnación Hidalgo Madrid ; Universidad Autonóma de Madrid ; Wilmington, Delaware : Addison Wesley, D.L.1997