27039 - History of Mathematics

Información del Plan Docente

Academic Year	2018/19
Subject	27039 - History of Mathematics
Faculty / School	100 - Facultad de Ciencias
Degree	453 - Degree in Mathematics
ECTS	6.0
Year	4
Semester	First semester
Subject Type	Optional
Module	---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

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

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

This course has a value of 6 ECTS. It is focused on the application of basic knowledge on historical development of mathematics to case studies based on primary sources.

4.2.Learning tasks
1. Master lectures on history of mathematics, and problem-solving seminars based on original sources (60 hours).
2. Teacher-guided case studies based on historical mathematical texts: writing a team-based assignment (2-3 students/team) explaining events, procedures, ideas, and concepts in a historical mathematical text.

4.3.Syllabus

1. Introduction, objectives and methodology. The origins of mathematics (Prehistory)
2. Mathematics in Antiquity: The Bronze Age (Egypt and Mesopotamia) and the Iron Age (Ionian awakening, Classic and Hellenistic Periods)
3. Medieval Mathematics: Far East Asia (China and India), Arabic mathematics, the Latin West.
4. Renaissance mathematics: Trigonometry, Calculation methods and Algebra.
5. The Scientific Revolution: Analytic Geometry and Infinitesimal Calculus.
6. The Enlightenment: The development of infinitesimal methods and applications.
7. The Industrial Revolution (18th-19th centuries): Descriptive Geometry, Algebraic equations, Probability Calculus, Foundations of Analysis, Numerical systems, Function Theory.
8. The Industrial Revolution (19th century): Applied mathematics (Analytical Mechanics and Mathematical physics) and Algebra (Theory of Determinants and Matrices, Quaternions and Vector Algebra, Structural Algebra).
9. The Industrial Revolution (19th century): Higher Geometry and Set theory.
10. The 20th Century: Mathematical Logic and Modern Algebra, Functional Analysis, Probability Theory, Linear Optimization and Computation.

4.4.Course planning and calendar

Information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the "Facultad de Ciencias" website and the department website (https://ciencias.unizar.es/)

4.5.Bibliography and recommended resources