

Academic Year/course: 2022/23

26419 - Historical and Regional Geology & Geology of Spain

Syllabus Information

Academic Year: 2022/23

Subject: 26419 - Historical and Regional Geology & Geology of Spain

Faculty / School: 100 - Facultad de Ciencias

Degree: 296 - Degree in Geology

588 - Degree in Geology

ECTS: 9.0

Year: 3

Semester: Second semester

Subject Type: Compulsory

Module:

1. General information

1.1. Aims of the course

Main objectives of the course are:

1. To understand the Geological History of Earth, including the main processes of lithosphere / atmosphere / hydrosphere evolution (e.g. formation of continental crust, initiation of plate tectonics, generation of oceans and continents, palaeoclimatic and paleogeographic reconstructions); as well as the emergence of living beings and life evolution and extinctions.
2. To know the global and regional geological context of the geology of Spain, characterizing its main geological domains and their evolution in the context of pre-Variscan evolution, and Variscan and Alpine cycles.
3. To understand the genesis and geodynamic context of the magmatic events and mineral resources of the main geological domains of Spain.

2. Learning goals

2.2. Learning goals

Upon passing the course, the student will be competent in:

1. Locating in space and time the main paleogeographic, palaeoclimatic and biological processes of the Earth history.
2. Explaining the rock (including mineral resources) and fossil records of outcropping units of the main geological domains of Spain, in the context global and regional geological processes.

3. Assessment (1st and 2nd call)

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

3.1. Continuous assessment

Continuous assessment includes the following assessment activities:

1. Theory exam (55% of the final mark), including the following proportions:

- Lectures 1-20 (40% of the final mark of the theory)
- Lectures 21-25 (9% of the final mark of the theory)
- Lecture 26 (3% of the final mark of the theory)
- Lecture 27 (3% of the final mark of the theory)

2. Laboratory practices (30% of the final mark), including the assessment of both the attendance to practices and the correction of the practices and related exercises.

3. Fieldwork (15% of the final mark), including the assessment of both the attendance to practices and the correction of the field notes and related exercises. This activity is mandatory (see ?Art. 9.1, 22th December 2010 ?Reglamento de Normas de Evaluación del Aprendizaje?, University of Zaragoza).

To pass the course, a 5/10 mark is required in assessment activities 1, 2 and 3; nevertheless, the student would pass de course with a 4/10 mark in 1, 2 or 3, if the total mark is equal or greater than 5).

3.2. Global assessment

Global assessment includes:

1. Theory exam, with similar structure than the continuous assessment.
2. Practice exam of laboratory practices. See also requirements for fieldwork assessment in 3.1.

Criteria to pass the course are similar to than of continuous assessment.

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, which are essential for the understanding of the course and which are complemented with laboratory sessions and fieldwork.

Class attendance is fundamental to properly follow the course. Attendance to laboratory practices is necessary for the proper development of the work and the written manuscript. Finally, another complementary training of this course is fieldwork, where different geostructural units of Spain are visited.

4.2. Learning tasks

This 9 ECTS (225 hours) course is organized as follows:

Lectures (49 hours)

Laboratory sessions (16 h): 8 sessions, 2 hours each.

Fieldwork (25 h): 5 daylong field trips

Autonomous work and study (126 h)

Exams (9 h)

Note: Teaching and assessment activities will be carried out on site for as long and as much as possible. This scenario could change if safety regulations recommended it.

4.3. Syllabus

Lectures:

Tema 1. Introduction to the Historical Geology.

Tema 2. Precambrian: origin of lithosphere, atmosphere and hydrosphere.

Tema 3. Precambrian: evolutionary stages and palaeogeographic reconstructions.

Tema 4. Early Paleozoic: Caledonian Orogeny.

Tema 5. Late Paleozoic: Variscan Orogeny.

Tema 6. Mesozoic.

Tema 7. Cenozoic: Alpine Orogeny.

Tema 8. Synthesis of the Historical Geology .

Tema 9. Geological domains of the Iberian Peninsula.?

Tema 10. Precambrian of the Iberian Massif.

Tema 11. Paleozoic of the northern Iberian Massif.

Tema 12. Paleozoic of the southern Iberian Massif.

Tema 13. Alpine cycle in Iberia.

Tema 14. Pyrenees: domains.

Tema 15. Pyrenees: pre-orogenic evolution.

Tema 16. Pyrenees: syn- y post-orogenic evolution.

Tema 17. Betic Chain: domains.

Tema 18. Betic Chain: evolution.

Tema 19. Intraplate chains of Iberia.

Tema 20. Cenozoic basins of Iberia.?

Tema 21. The Precambrian and the origin of life. Origin of metazoans in the Proterozoic.

Tema 22. The radiation of life during the Cambrian.

Tema 23. Life evolution and diversity in marine and continental environments during the Paleozoic.

Tema 24. Life during the Mesozoic. The Cretaceous/Paleogene extinction: causes and consequences.

Tema 25. The Cenozoic: from the 'greenhouse' world to the 'icehouse' world. Mammals expansion. The Quaternary: glaciations and their consequences. *Homo sapiens* and the current climate change.

Tema 26. Magmatism in Spain.

Tema 27. Variscan and Alpine mineral deposits in the Iberian Peninsula.

Laboratory practices:

1. Interpretation of geological maps:

- Local and general stratigraphic series
- Analysis of discontinuities
- Palaeogeological maps

2. Group work for the study of stratigraphic units of Paleozoic and Mesozoic basins in Spain:

- Lithostratigraphic schemes (2/3 dimensions)?
- Isopach maps?
- Palaeogeological maps

Fieldwork:

1. Study of different sedimentary units of the Pyrenees (1 day).
2. Study of different sedimentary units of Moncayo-Sierra de Cameros-Sierra de La Demanda (2 days).
3. Study of different sedimentary units of the Basque-Cantabrian Range (2 days).

4.4. Course planning and calendar

Lectures and laboratory practices will start on the first and second weeks of the second semester, respectively. Presentation of the Group work will be in May. Fieldwork report deadline will be during the following week to the field trip.

Further 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 Faculty of Sciences and Earth Sciences Department websites (<https://ciencias.unizar.es>, <https://cienciatierra.unizar.es>) and Moodle.

4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=26419>