Universidad Zaragoza

Academic Year/course: 2024/25

26910 - Geology

Syllabus Information

Academic year: 2024/25
Subject: 26910 - Geology
Faculty / School: 100 - Facultad de Ciencias
Degree: 447 - Degree in Physics
ECTS: 6.0
Year: 1
Semester: Second semester
Subject type: Optional
Module:

1. General information

This is a first-year elective subject (6 ECTS, second semester). This subject is intended to enable students to take more specific subjects dealing with planet Earth in the rest of the degree program. As it is an introductory subject, it allows presenting a global and interdisciplinary vision of the Earth Sciences that enables the student to integrate the different geological disciplines.

General Objective:

- Understand the basic concepts, principles and methods of Geology, and know how to apply them to simple cases.

Specific objectives:

- To understand the relationships and interactions between the different subsystems that make up planet Earth, their dynamics, the processes that take place and their results.
- To interpret simple geological maps and draw geological cross-sections.
- To understand the significance of the time variable as a key factor in geological processes.

2. Learning results

Upon completion of the subject, the student will be able to:

- Recognize the main types of minerals and rocks, the basic types of tectonic structures and the basic forms of landscape evolution, as well as to understand the processes that generate them.
- Collect data and samples in the field.
- Use geological data to solve simple problems and cases.
- Apply simple physical models to interpret geological processes.

3. Syllabus

THEORY

Block 1

1. The geological cycle.
2. Geological time.
3. The Earth and the Solar System.
4. Internal structure of the Earth.
5. Plate tectonics.

Block 2

6. Constructive margins.
7. Destructive margins and in collision orogens.
8. The interior of the plates.
9. Deformation of rocks, 1.
10. Deformation of rocks, 2.

Block 3

11. Formation of sedimentary rocks.

12. Landscape evolution.

Block 4

13. The origin of the Earth and the Precambrian.

14. The Phanerozoic.

PRACTICES

1. Rocks: what are they and how are they classified?

2. Reading and interpretation of geological maps

3. Calculation of the temperature in the Earth's interior

4. Stress analysis and fracture mechanics

5. Deformed rocks: petrophysics and rheology

6. The shape of the landscape

7. Geological survey of a region

SEMINARS

1. Weather in Geology.

2. Basic exercises on topographic and geological maps.

3. Plate tectonics.

4. Deformed rocks: petrofabrics

5. The thermal maximum of the Paleocene-Eocene boundary: what can it tell us about current warming?

FIELD PRACTICES

A field trip (on Friday, at the end of the term), with a route to be determined.

4. Academic activities

- Activity 1: theory classes (3 weekly sessions of 1 hour). Explanation of the fundamental concepts.
- Activity 2: seminars: (5 seminars of 1 hour). Solution and discussion of problems and case studies.
- Activity 3: laboratory and classroom-based practicals (7 sessions of 2 hours). They consist of both laboratory activities and the resolution of problems and cases in the classroom related to various geological aspects.
- Activity 4: field trip (1 day). Transect of the Ebro Basin and the Iberian Chain in Aragon to see on the ground diferente gelogical structures and processes.

5. Assessment system

Continuous Assessment

- Activity 1. Three written tests during the teaching period (60% of the final grade).
- Activity 2. Reports based on the content of the seminars (5 reports, 10% of the final grade).
- Activity 3. Reports based on laboratory and classroom-based practicals (7 reports, 20% of the final grade).
- Activity 4. Field trip report (10% of the final grade). Except for duly justified reasons, students must attend the field trip and submit the corresponding report for grading. If unable to attend for a justified reason, a supplementary essay must be submitted.

In order to pass the subject through the continuous evaluation system, the following must be fulfilled:

- Obtain an average of 5 (out of 10) or higher on all three theory tests (activity 1), with none of them below 4.
- Obtain a weighted average of 5 (out of 10) or higher in activities 2 (25%), 3 (50%) and 4 (25%), with none of the activities below 4.

The final grade of the subject will be the weighted average of the theory grade (60%) and the practical grade (40%), provided that both are equal to or higher than 5. Otherwise, failed (below 5 out of 10) theory midterm exams , practices, seminar and field reports must be repeated in the global evaluation exam.

Overall assessment

- Written test of the theory part (60%).
- Practical test of the contents covered in the cabinet and laboratory practices and in the seminars (30%). Written test on the field trip (10%).

The subject will be considered passed by global evaluation if the average of the three tests is higher than 5 and none of them is below 4.

6. Sustainable Development Goals

13 - Climate Action