

Academic Year/course: 2022/23

26409 - Geomorphology

Syllabus Information

Academic Year: 2022/23

Subject: 26409 - Geomorphology

Faculty / School: 100 - Facultad de Ciencias

Degree: 296 - Degree in Geology

588 - Degree in Geology

ECTS: 8.5

Year: 2

Semester: Annual

Subject Type: Compulsory

Module:

1. General information

1.1. Aims of the course

The subject and its expected outcomes respond to the following approaches and objectives:

The subject of Geomorphology has the following general objectives:

- To learn about the main geomorphological elements and surface formations, as well as the processes responsible for their genesis.
- To learn how to draw up and interpret geomorphological maps.
- To acquire skills in collecting, analysing and communicating geomorphological information.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (<https://www.un.org/sustainabledevelopment/es/>), so that the acquisition of the learning outcomes of the subject provides training and competence to contribute to some extent to their achievement

Goal 1: End poverty.

Goal 2: Zero hunger.

Goal 3: Health and well-being.

Goal 4: Quality education.

Goal 5: Gender equality.

Goal 6: Clean water and sanitation.

Goal 7: Affordable and clean energy.

Goal 10: Reducing inequalities.

Goal 12: Responsible production and consumption

Goal 13: Climate action

Goal 14: Underwater Life

Goal 15: Life of Terrestrial Ecosystems

Goal 16: Peace, justice and strong institutions.

Goal 17: Partnerships to achieve the goals.

1.2. Context and importance of this course in the degree

Geomorphology deals with the study of the processes that act on the earth's surface and the forms and deposits they generate, providing key information for: (1) The reconstruction of the geological and environmental evolution of specific areas in the recent past. (2) The analysis and mitigation of environmental problems (risks and impacts). (3) The enhancement of geological heritage. It is therefore a discipline with a prominent role in the geologist's profession.

The annual subject of Geomorphology, with 8.5 ECTS credits, is part of the Fundamentals of Geology module. This module includes a number of subjects designed to provide students with the basic theoretical and methodological foundations of the main geological disciplines. The Geomorphology subject prepares students to successfully tackle other subjects in the Applied Geology module, such as Geological Risks, Environmental Geology, Geological and Geoenvironmental Cartography or Geological Engineering.

1.3. Recommendations to take this course

-To approach the subject through a continuous work plan, studying the theoretical contents as they are taught and keeping up to date with the proposed work.

-Attend all the activities of the course, regardless of whether or not an attendance control is carried out. The exams will

include questions on geomorphological elements and surface formations, in addition to the practical aspects seen and analysed in the theory sessions, as well as in the laboratory and field practicals.

- Make use of academic tutorials.
- Use the recommended bibliography.

2. Learning goals

2.1. Competences

On passing the course, the student will be more competent to...

Know the geological processes and factors involved in the generation of geomorphological elements and surface formations. Infer information on the activity of processes from surface forms and deposits. Handle basic bibliography on Geomorphology including texts in English.

Relate and integrate the contents of Geomorphology with those of other disciplines of Geology and other fields of Science. Transmit knowledge, reasoning and interpretations in a structured way both orally and in writing. Elaborate and interpret geomorphological maps.

Identify and interpret genetically and evolutionary forms and deposits by means of photo-interpretation and direct observation in the field.

2.2. Learning goals

In order to pass this subject, the student must demonstrate the following results...

Knows and can identify the main surface morphologies and formations, as well as the processes and factors involved in their genesis.

Is able to elaborate and interpret geomorphological maps and reconstruct the geomorphological evolution of a specific area through them.

Is able to transmit orally and in written form knowledge, hypotheses and interpretations on geomorphological aspects. Is able to relate and integrate the contents of Geomorphology with those of other disciplines of Geology.

2.3. Importance of learning goals

Geomorphology is an indispensable tool for studying the processes that act on the earth's surface and that interact to a greater extent with humans. The analysis of modelling and surface formations helps to reconstruct the recent past, to understand the current dynamics of the processes that affect the surface and to make predictions about their activity in the future. It is therefore a discipline with great potential for understanding and solving many of the geological problems affecting our society. In the approach of the subject, special attention is paid to the elaboration and interpretation of geomorphological cartographies, as we understand that they are the basis of any geomorphological study. On the other hand, we consider that it is highly beneficial for students, with a view to their professional projection, to strengthen their ability to collect, analyse and communicate geomorphological information.

3. Assessment (1st and 2nd call)

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

Assessment details

The student must demonstrate that has achieved the intended background through the following evaluation activities:

Evaluation Activities

Written test on the basic knowledge of Geomorphology acquired in lectures, seminars and practical sessions. The written tests will consist of a review of questions of long and short answer, multiple choice and True and False case resolution. In these tests there will be evaluated the theoretical contents acquired so much in the theoretical classes as in the seminars, as well as of diverse aspects seen in practices of office and field.

Elaboration, presentation and defense in seminars of a bibliographical work on some of the topics proposed by the teacher. Students will prepare individually or in pairs a bibliographical work with a summary in English on someone of the topics proposed by the teacher. The production of the work will on a written memory of a maximum of 25 pages. The exhibition will be made public through a power point presentation lasting 15 minutes plus 5 minutes for discussion.

Preparation of maps and reports on practices of office and seminars. Students will complete exercises and geomorphological mapping developed by interpreting aerial photographs.

Attendance and participation of students in the field practices. During the fieldtrips the teacher, in view of the obligatory character of the same ones will check the assistance by means of a control of signatures. The assessment of student achievement at the fieldtrips will be held by several of questions in the written exams relative to the different seen aspects analyzed or visited in fieldtrips.

Continuous evaluation: Evaluation and Qualification Criteria

The valuation or qualification of the different activities of evaluation will be realized following the following criteria:

- Test or exam on the basic knowledge of Geomorphology acquired in the magisterial participative classes, the seminars and the practical meetings. This note will suppose 60 % of the final note of the subject.
- Elaboration, presentation and defense in seminars of a bibliographical work on some of the topics proposed by the teacher. It is obligatory to attend at least 75 % of the presentations. The evaluation of these jobs will be held by a rubric. The note of the work will be 50% oral, 30 % ppt presentation, 20 % of heading assessment of the remaining partners. This note will represent 20 % of the final grade for the course
- Preparation of maps and reports on practices and seminars. This note will represent 20 % of the final grade for the course.

Final exam

Final theoretical-practical examination for those who have not passed the subject through the continuous evaluation (100% of the final grade)

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, laboratory sessions, seminars and field trips.

4.2. Learning tasks

This course is organized as follows:

- **Lectures.** These participatory sessions will be focused on the presentation of different landforms and processes.
- **Laboratory sessions.** Resolution of problems and analysis of case studies. These practice sessions will start with brief methodological explanations aimed at introducing case studies, to be analyzed by the students using stereoscopes and aerial photographs under the supervision of the lecturer.
- **Seminars.**
- **Fieldwork.** The field program will be developed in five journeys. Different geomorphological landforms and processes will be examined in the field.

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 related to the covid19 crisis recommended online activities.

4.3. Syllabus

This course will address the following topics:

- **Topic I. Introduction to the Geomorphology**
 - Concept of geomorphology and History of geomorphology
 - Basic concepts and theoretical principles
- **Topic II. Structural geomorphology**
 - Structural geomorphology and structural landforms
 - Geomorphology and plate tectonics
 - Igneous and volcanic geomorphology
 - Granitic Geomorphology
 - Karst geomorphology
- **Topic III. Geomorphic systems**
 - Weathering
 - Hillslope processes and forms: Introduction, Alluvial fans, Pediments
 - Fluvial geomorphology
 - Coastal geomorphology
- **Topic IV. Climatic geomorphology**
 - Glacial landforms and processes
 - Periglacial landforms and processes
 - Arid zones landforms and processes
 - Tropical landforms and processes
 - Geomorphology and Climatic change

- **Topic V. Applied geomorphology**

4.4. Course planning and calendar

This course covers the first and the second semesters.

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=26409>