ANEXO I

Faculty of Experimental Sciences

GENERAL SPECIFICATIONS

ACADEMIC YEAR 2023-24

DEGREE IN GEOLOGY, DEGREE IN ENVIRONMENTAL SCIENCES, DOUBLE DEGREE IN ENVIRONMENTAL SCIENCES & GEOLOGY

Subject Data

Name:	
GEOLOGÍA	
English name:	
FUNDAMENTALS OF GEOLOGY	
Code:	**Type:**
757609105, 757709104, 757914102	BASIC

Hours:

	Total	**In class**	**Out class**
Time distribution	150	60	90

ECTS:

Standard group	**Small groups**			
	Classroom	**Lab**	**Practices**	**Computer classroom**
3	0	2	1	0

Departments:	**Knowledge areas:**
Ciencias de la Tierra / Earth Sciences	Cristalografía y Mineralogia / Crystallography & Mineralogy
Year:	**Semester**
1º	First semester

TEACHING STAFF

Name:	**E-mail:**	**Telephone**
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Others Data (Tutoring, schedule...)

See the information in the Web Page of the Faculty of Experimental Sciences

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SPECIFIC INFORMATION OF THE COURSE

1. Contents description:

1.1 In English:

The subject is an introduction to the Fundamentals of Geology. It is taught in the first year of the Degrees on Geology and Environmental Sciences with the aim of showing the basic knowledge of theory and practical work on Geology, including: the Geological Time Scale, Geological Materials, External and Internal Geological Processes (Erosion and Sedimentation, Magmatism, Metamorphism, Deformation, etc.), and Global Tectonics.

1.2 In Spanish:

La asignatura es una introducción a los Fundamentos de la Geología. Se imparte en el primer curso de los Grados de Geología y Ciencias Ambientales con el objetivo de mostrar los conocimientos básicos teóricos y prácticos de Geología, incluyendo: la Escala Geológica del Tiempo, Materiales Geológicos, Procesos Geológicos Externos e Internos (Erosión y Sedimentación, Magmatismo, Metamorfismo, Deformación , etc.), y Tectónica Global.

2. Background:

2.1 Situation within the Degree:

The subject is an introduction to the Fundamentals of Geology. It is taught in the first year of the Degrees on Geology and Environmental Sciences with the aim of showing the basic knowledge of theory and practical work on Geology, including: the Geological Time Scale, Geological Materials, External and Internal Geological Processes (Erosion and Sedimentation, Magmatism, Metamorphism, Deformation, etc.), and Global Tectonics.

2.2 Recommendations

The course is designed for students of Earth & Environmental Sciences. For other students please contact the teaching staff.

3. Objectives (as result of teaching):

By the end of the course students should be able:

- To know and understand the terminology, fundamental concepts and principles of Geology.
- To know the basic structure of the Earth, its composition and evolution.
- To identify the most common minerals and rocks

4. Skills to be acquired

4.1 Specific Skills:

E2 - Ability to identify and characterize the properties of different materials and geological processes (minerals, rocks, fossils, reliefs, structures, etc.) using geological, geophysical, geochemical, etc. methods.
E5 - Know and use theories, paradigms, concepts and principles of Geology
E9 - Know how to prepare, process, interpret and present data using the appropriate qualitative and quantitative techniques, as well as the appropriate computer programs.
E13 - Have a general vision of Geology on a global and regional scale.
E16 - Correctly use the terminology, nomenclature, conventions and units in Geology.

4.2 General, Basic or Transversal Skills:

G1 - Capacity for analysis and synthesis.
G2 - Autonomous learning capacity.
G3 - Oral and written communication skills.

G7 - Capacity for organization and planning.
G8 - Information management capacity.
G9 - Ability to apply knowledge to practice.
G14 - Capacity for critical and self-critical reasoning.

CB1 - That students have demonstrated to possess and understand knowledge in an area of study that starts from the base of general secondary education, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects involving knowledge coming from the forefront of their field of study.
CB2 - That students know how to apply their knowledge to their work or vocation in a professional way and possess the skills to demonstrate through the elaboration and defense of arguments and the resolution of problems within their area of study.
CB3 - That students have the ability to gather and interpret relevant data (normally within their area of study) to make judgments that include a reflection on relevant issues of a social, scientific or ethical nature.
CB4 - That students can transmit information, ideas, problems and solutions to both a specialized and non-specialized public.
CB5 - That students have developed those learning skills necessary to undertake further studies with a high degree of autonomy.

CT1 - That students have developed and demonstrated learning skills and knowledge from their field of study, being able to apply them in their work, interpreting relevant data to make judgments on topics of various kinds, being able to transmit them to both specialized and non-specialized audiences. specialized.

5. Training Activities and Teaching Methods

5.1 Training Activities:

- Practical theoretical group.
- Laboratory teaching group.

5.2 Teaching Methods:

- Face-to-face classes related to the theoretical and practical contents of the subject, using teaching resources such as transparencies, computerized presentations and videos.
- Laboratory and field practices with small groups handling of experimental techniques, discussion of results, drawing conclusions, presentation of a final report.

5.3 Development and Justification:

During the lectures, the professor will explain the theoretical contents of the subject. The students will also have the chance to solve some problems and doubts about theoretical contents under the supervision of the professor. Laboratory and filed sessions will consist in exercises also supervised by the professor focused on the main aspects of the subject: Earth Materials and Processes. The individual and group tutorials will be aimed to answer and solve any question of the students about the subject.

6. Detailed Contents

INTRODUCTION
Lesson 1. Introduction to Geology. The Earth in the context of the universe and the Solar System. Structure and composition of the Earth.
Lesson 2.- The Geological Time Scale. Relative and absolute dating.
GEOLOGICAL MATERIALS
Lesson 3.- Minerals: structural characteristics and classification. Minerals of petrogenetic and economic interest.
Lesson 4.- Classification of rocks. Basic concepts of petrography.
GEOLOGICAL PROCESSES
Lesson 5.- Magmas: definition and physical properties. Magmatic differentiation processes. Intrusive bodies and volcanic buildings.
Lesson 6.- Metamorphism and metasomatism. Types of metamorphism and metamorphic facies.
Lesson 7.- Deformation and fracturing of rocks. Folds: elements, symmetry and classifications. Fractures: elements and main types.
Lesson 8.- Earthquakes: concepts, origin and effects. Seismology: seismographs, seismograms and seismic waves. Earthquakes magnitude and location.

Lesson 9.- Magnetism, Gravity and Internal Heat of the Earth. Earth magnetic field and Paleomagnetism. Gravity and terrestrial gravitational field. Gravimeters and gravitational anomalies. The internal heat of the Earth and the geothermal gradient

GLOBAL TECTONICS

Lesson 10.- Tests of continental drift and ocean expansion. Tectonic plates and types of plate limits. Magmatism and metamorphism in relation to Plate Tectonics.

LABORATORY PRACTICES

- Tools for the identification of minerals and rocks.
- Identification of common non-silicate minerals.
- Identification of common silicate minerals.
- Basic concepts of petrography: textures, structures and classification of rocks.
- Identification of common igneous rocks
- Identification of common metamorphic rocks
- Identification of common sedimentary rocks.

FIELDWORK

Two-days field work on rocks and geological formations of sedimentary/metamorphic/igneous origin from the Iberian Massif and/or the Betic Chain.

7. Bibliography

7.1 Basic Bibliography:

- Frederick K. Lutgens & Edward J. Tarbuck (2018). Essentials of Geology, 13th Edition. Pearson. ISBN-13: 9780134446622

7.2 Additional Bibliography:

- Vincent Cronin (2018). Laboratory Manual in Physical Geology, 11th Edition. AGI American Geological Institute. Pearson. ISBN-13: 9780134675756

8. Systems and Assessment Criteria

8.1 System for Assessment:

- Final exam.
- Practical laboratory work and fieldwork report.
- Continuous assessment.

8.2 Assessment Criteria and Marks:

8.2.1 Examinations Convocatory I

The evaluation of the subject will be divided into the following three components:

- Theory contents: The grade for this part will constitute 60% of the overall score for the course. It will be evaluated through a final theory exam that will consist of answering a series of open-ended questions on the theory contents.
- Laboratory practices: The grade for this part will constitute 30% of the overall score for the course. It will be evaluated through a practical exam on the identification of common minerals & rocks, together with the continuous evaluation of the work done in the Lab classes.
- Fieldwork: The grade for this part will constitute 10% of the overall score for the course. It will be evaluated through a written report on the contents of the work done in the field.

Each part will be evaluated in terms of a numerical scale from 0 to 10. Students are required to obtain a minimum of 4 in each part to make the final average grade. Final results will be given using the final average grade taking into account the percentages, with the corresponding qualitative ratings below: • <=4.9: Fail (D) • 5.0 - 6.9: Pass (C) • 7.0 - 8.9: Pass with Merit (B) • 9.0 - 10: Distinction (A).

8.2.2 Examinations Convocatory II

Continuous evaluation is not applicable.

8.2.3 Examinations Convocatory III
Continuous evaluation is not applicable.
8.2.4 Extraordinary Convocatory
Continuous evaluation is not applicable.
8.3 Single Final Evaluation:
Those students that have not properly followed the course or those that choose to have a single assessment will have a single final exam. The evaluation will consist on a written test in which 80% of the score will correspond to questions related to the contents of the theory program and the remaining 20% to the contents explained in the laboratory practices and field work. Note: This system is also applicable to ordinary evaluations II and III and to extraordinary evaluation.

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9. Indicative weekly teaching organization:				
Date	**Large groups**	**Small groups** / **Computer class**	**Evaluable tests and/or activities**	**Content**
1st	2	0		Lesson 1
2nd	2	0		Lesson 2.1
3rd	2	0		Lesson 2.2
4th	2	2		Lesson 3.1, Practice 1
5th	2	2		Lesson 3.2, Practice 2
6th	2	2		Lesson 3.3, Practice 3
7th	2	2		Lesson 4.1, Practice 4
8th	2	2		Lesson 4.2, Practice 5
9th	2	2		Lesson 4.3, Practice 6
10th	2	2		Lesson 5, Practice 7
11th	2	2		Lesson 6, Practice 8
12th	2	2		Lesson 7, Practice 9
13th	2	2		Lesson 8, Practice 10
14th	2	0		Lesson 9
15th	2	10		Lesson 10. Fieldwork on sedimentary and igneous rocks
Total	30	30		