

## SUBJECT TEACHING GUIDE

G1557 - Teaching the Earth Sciences and Earth Systems

Double Degree in Teaching in Early Childhood Education and Primary Education  
Degree in Early Childhood Education  
Degree in Primary Education Teaching  
Academic year 2022-2023

1. IDENTIFYING DATA					
Degree	Double Degree in Teaching in Early Childhood Education and Primary Education			Type and Year	Optional. Year 3 Optional. Year 3
Faculty	School of Teacher Training				
Discipline	Subject Area: Learning of Natural Sciences, Social Sciences and Mathematics Speciality in Experimental Sciences Module: Complementary or Specialised Training Module: Training in Teaching and the Discipline				
Course unit title and code	G1557 - Teaching the Earth Sciences and Earth Systems				
Number of ECTS credits allocated	6	Term	Semester based (1)		
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. CIENCIAS DE LA TIERRA Y FISICA DE LA MATERIA CONDENSADA
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Other lecturers	

### 3.1 LEARNING OUTCOMES

- Recognize the structure and composition of the Earth and the different spheres that compose it (atmosphere, hydrosphere, solid earth, edaphosphere).
- Understand the role of plate tectonics in the origin of internal processes.
- Understand the role of climate and severity in the generation of external processes.
- Design protection plans against the occurrence of natural hazards in the school environment.
- Develop educational proposals concerning the interaction of Earth Sciences and techniques, society and sustainable development.
- Propose problematic situations and design activities in the field of Earth Sciences teaching and know how to solve and resolve problems related to this topic.
- Integrate the content of these sciences in our natural, social and cultural context.
- Develop teaching resources appropriate to the stage and promote meaningful learning related to Earth Sciences.
- Train teachers to promote scientific research at school.

### 4. OBJECTIVES

- To know the role of Earth Sciences in the curriculum of primary education
- Knowing the importance of scientific literacy in Earth Sciences as the basis of personal training and face their application in the classroom
- Promote scientific curiosity and general interest in Earth Sciences
- Learn the importance of teaching Earth Science and Earth Systems outside of the classroom
- Integrate the contents of Earth Sciences within our natural, social and cultural context.
- Understand the basic principles of geology and know the different periods of geological time as well as the dating methods.
- Understand the functioning of planet Earth both internally and externally.
- Differentiate different types of rocks and the landscapes associated with different rock substrates and soils.
- Understand the causes of climate change and the evolution of the climate throughout the history of the planet.
- Promote actions that help students know how to respond to various natural disasters.
- Promote school research in the field of Earth Sciences.

### 6. COURSE ORGANIZATION

CONTENTS	
1	Principles of geology. Geologic time. Didactic examples
2	Structure and composition of the Earth, the atmosphere, the hydrosphere and the edaphosphere. Didactic models.
3	Plate tectonics and internal processes. Teaching of internal geological processes
4	External processes. Teaching of external geological processes
5	Geological resources: minerals, rocks, landscape, etc. Didactic examples
6	Evolution of climate over the past. Didactic models
7	Natural hazards. Risk protection practices in the school environment

## 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Thematic work: 20%; Students, during the teaching period, will carry out work in pairs on a topic indicated by the teacher. The work will consist of an oral presentation, as well as the submission of a report. Students who do not carry out or present this	Work	Yes	Yes	20,00
Laboratory/experimental practices: 50%; students must submit, at the end of the practice period, a portfolio with all the practices carried out, for evaluation by the teaching staff. Students who do not do the practices, or do not submit the portfolio, mu	Laboratory evaluation	Yes	Yes	50,00
Exam: 30%; The exam will consist of, at least, one question for each topic covered in the theory classes.	Written exam	Yes	Yes	30,00
<b>TOTAL</b>				<b>100,00</b>
<b>Observations</b>				
<p>Minimum calification. Any test or evaluation activity that has a weight equal to or greater than 30% in the final evaluation of the subject, may carry the requirement of a minimum grade for passing the referred subject.</p> <p>If a student does not obtain the minimum grade required to pass an evaluation test, the overall grade for the subject will be the lowest value between 4.9 and the weighted average of all the evaluation tests.</p> <p>In addition to the laboratory practices, whenever possible, external activities related to the subject may be developed, such as excursions or educational visits. These activities will be optional.</p>				
<b>Observations for part-time students</b>				
<p>Students with partial registration must carry out a substitute project for the thematic work and, compulsorily, must carry out/deliver the laboratory practices.</p> <p>They will also need to take the final exam.</p>				

## 8. BIBLIOGRAPHY AND TEACHING MATERIALS

### BASIC

Cañal, P. (coord.) (2011) - Biología y Geología: complementos de formación disciplinar. Editorial Graó Barcelona: 208 pp.

Cañal, P. (coord.) (2011) - Didáctica de la biología y la geología. Editorial Graó Barcelona: 175 pp.

Carenas, M.B., Giner, J.L., González, J., y Pozo, M. (2014) - Geología. Ediciones Paraninfo, Madrid: 487 pp.

Luffiego, M. (coord.) (2005) - Ciencias de la Tierra y del Medio Ambiente. Consejería de Educación del Gobierno de Cantabria, Santander: 337 pp.

Monroe, J.S., Wicander, R. y Pozo, M. (2008) □ Geología. Dinámica y evolución de la Tierra. Paraninfo Cengage Learning, Madrid: 726 pp.

Tarback, E.J. y Lutgens, F.K. (2005) □ Ciencias de la Tierra. Una introducción a la geología física. Pearson Education, Madrid: 710 pp.

