SUBJECT TEACHING GUIDE

G555 - Teaching the Natural Environment I

Double Degree in Teaching in Early Childhood Education and Primary Education
Degree in Primary Education Teaching

Academic year 2025-2026

1. IDENTIFYING DATA					
Degree	Double Degree in Teaching in Early Childhood Education and Primary Education Degree in Primary Education Teaching		Type and Year	Compulsory. Year 3 Compulsory. Year 3	
Faculty	School of Teacher Training				
Discipline	Subject Area: Teaching and Learning of Experimental Sciences Module: Training in Teaching and the Discipline				
Course unit title and code	G555 - Teaching the Natural Environment I				
Number of ECTS credits allocated	6	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. FISICA APLICADA
Name of lecturer	ALFREDO FRANCO PEREZ
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Other lecturers	IGNACIO HERNANDEZ CAMPO MANUEL DE PEDRO DEL VALLE PALMERINA GONZALEZ IZQUIERDO DAVID GONZALEZ ALONSO

3.1 LEARNING OUTCOMES
- To recognize the structure, components, and essential aspects of curricular designs in physics and chemistry, as well as their relationship with other sciences.
- To formulate problem-based situations and design activities within the field of science education, and to effectively address and solve subject-related problems.
- To integrate the content of these sciences within our natural, social, and cultural context.
- To develop didactic resources appropriate to the educational stage and to promote meaningful learning related to these sciences.
- To equip educators to foster school-based research.
- To apply didactic knowledge to the processes of curriculum design, implementation, and evaluation.
- To recognize and appreciate the importance of scientific literacy as a foundation for personal development and classroom application.

4. OBJECTIVES
To promote students' exploratory activities through situations related to environmental awareness , particularly the physical environment, living organisms, and knowledge of their own bodies.
To understand the main contributions of the Natural Sciences to the Primary Education curriculum.
To develop a critical interest in the study of science, helping students to understand the significance of Natural Sciences as a component of culture, including their impacts and interactions (science, technology, society, and environment—STSE relationships), particularly the role science plays in our lives and in transforming the environment.
To understand the basic elements of science education methodology in order to design didactic interventions that support the development of scientific knowledge and its application in various contexts.
To understand the characteristics of the main challenges in the teaching and learning process of experimental sciences , as well as the most common features of students' prior knowledge regarding different topics within the field of experimental sciences .
To equip students with the skills to solve authentic problems in Experimental Sciences (Physics and Chemistry) related to real-life contexts.
To foster students' scientific curiosity and interest in the Experimental Sciences.
To understand the importance of developing scientific literacy in the general population to comprehend major scientific and technological phenomena, as well as their social and personal implications.

6. SUBJECT PROGRAM	
CONTENTS	
1	IMPORTANCE OF THE SCIENTIFIC-DIDACTICAL EDUCATION IN SCIENCE. 1. Introduction to science. 2. Scientific education and Scientfic didactics.
2	PHYSICS. THE PHYSICAL PROCESSES. 2. Introduction to Physics. Movement and Forces. 3. Work and Energy. 4. Heat and Temperature 5. Waves and Light. 6. Electricity and Magnetism. 7. Fluids.
3	CHEMISTRY. THE CHEMICAL PROCESSES. 8. Introduction to Chemistry. Basic Concepts. 9. The Chemical processes. 10. The structure of Matter. 11. Chemical reactions. Stoichiometry. Dissolutions. 12. The Periodic Table. 13. The Water. 14. The Chemical Bond.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Theoretical-practical exam.	Written exam	Yes	Yes	60,00
Laboratory practicals.	Laboratory evaluation	No	No	20,00
Class assignments.	Work	No	Yes	20,00
TOTAL				100,00

Observations

LINGUISTIC COMPETENCE: It is understood that university students possess the necessary linguistic skills to successfully perform oral and written expression at all levels, including spelling, grammar, vocabulary, pragmatics, and discourse coherence. Demonstrating these skills in assignments and exams is a mandatory requirement for passing the course.

PLAGIARISM: Regarding fraudulent conduct (plagiarism) in evaluation assessments, grading will comply with Article 32 of the University of Cantabria's Evaluation Procedures Regulations: "Fraudulent completion of tests or evaluation activities will result in an automatic failing grade of '0' for the course in the corresponding exam session, invalidating any grades obtained in all evaluation activities for the extraordinary exam session. This situation will be reported to the Academic Department."

CITATION RULES: The Faculty Board has approved the adoption of APA standards as the citation criteria for all academic work. Although these standards have various editions, the summary provided by the University Library (BUC) of the latest edition is recommended as a reference.
http://web.unican.es/buc/recursos/guias-y-tutoriales/guia?g=28

USE OF ARTIFICIAL INTELLIGENCE (AI): When the use of artificial intelligence (AI) is permitted in an evaluable assignment, the instructor will specify the extent to which it may be employed. Additionally, students may be required to provide further information, orally or in writing, about the development of the task. Furthermore, whenever a student uses AI, they must clearly indicate how and for what purpose it was used. Any unethical or fraudulent use of AI will be addressed in accordance with Articles 31 and 32 of the University of Cantabria's Evaluation Procedures Regulations concerning fraudulent conduct in assessments and the corresponding disciplinary measures.

GRADING IN CASE OF NOT MEETING THE MINIMUM PASSING SCORE IN AN ASSESSMENT: If a student fails to achieve the minimum required score to pass an evaluation, the final course grade will be the lower value between 4.9 and the weighted average of all evaluation assessments, as established in Article 35 of the University of Cantabria's Evaluation Procedures Regulations.

CONTINUOUS ASSESSMENT: As described in the evaluation methodology, students will have been assessed on 40% of the course prior to the end of classes, including laboratory practicals and class assignments. This complies with Article 17 of the University of Cantabria's Evaluation Procedures Regulations, which states, "Upon completion of the instructional period, the student must have completed evaluation activities accounting for at least 40% of the final course grade."

EXTRAORDINARY EXAM SESSION: Students who do not pass the course in the regular exam session will have an extraordinary exam equivalent to the final exam of the regular session, which will account for 80% of the final grade. The remaining 20% will correspond to the non-recoverable portion earned throughout the course.

Observations for part-time students

Part-time enrolled students are entitled to a single evaluation, in accordance with Article 24 of the University of Cantabria's Evaluation Procedures Regulations. The student may undergo a single evaluation process. This single evaluation will entitle the student to receive the same grade as those students participating in continuous assessment. The single evaluation may consist of an exam and/or the submission of assignments, and, in exceptional cases, may require mandatory attendance and successful completion of certain in-person activities (such as laboratory classes, clinical practices, seminars, etc.).

Part-time students who regularly attend classes may opt to follow the same evaluation system as full-time students.

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
Rivero, A., Rivero García, A., Martín del Pozo, R., Solís Ramírez, E., Porlán Ariza, R. (2017). Didáctica de las ciencias experimentales en educación primaria. España: Editorial Síntesis. Pujol, R. M. (2007). Didáctica de las ciencias en la educación primaria. España: Editorial Síntesis. Artigue Alonso, B., Lozano Martínez, M. T., Markina Galíndez, M. C., Mendizábal Uliarte, A. (2013). 84 experimentos de química cotidiana en secundaria. España: Graó. Lozano Lucia, Ó. R., Solbes, J. (2014). 85 experimentos de física cotidiana. España: Grao. Robertson, W. C., Kralik, M. S. (2007). Chemistry Basics. Estados Unidos: National Science Teachers Association. Robertson, W. C. (2002). Force and Motion. Estados Unidos: NSTA Press. Robertson, W. C. (2002). Energy. Estados Unidos: NSTA Press. Robertson, W. C. (2005). Electricity and Magnetism. Estados Unidos: NSTA Press. Robertson, W. C. (2003). Light. Estados Unidos: NSTA Press. Robertson, W. C., Diskin, B. (2003). Sound. Estados Unidos: NSTA Press.