SUBJECT TEACHING GUIDE

942 - Recent and Historical Development in Physics, Chemistry and Technology, and School Knowledge
Master's Degree in Secondary Education Teacher Training

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Master's Degree in Secondary Education Teacher Training			Type and Year	Optional. Year 1
Faculty	School of Teacher Training				
Discipline	Subject Area: Complements for Disciplinary Training Specific Module in the Speciality of Physics, Chemistry and Technology				
Course unit title and code	942 - Recent and Historical Development in Physics, Chemistry and Technology, and School Knowledge				
Number of ECTS credits allocated	4,5	Term		Semester based (2)	
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. FISICA APLICADA
Name of lecturer	ALFREDO FRANCO PEREZ
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Other lecturers	JOSE JULIO GÜEMEZ LEDESMA VIDAL FERNANDEZ CANALES CARLOS SAINZ FERNANDEZ MANUEL DE PEDRO DEL VALLE

3.1 LEARNING OUTCOMES
- The student knows the development of scientific and technological thinking.
- The student knows how to identify the social implications of scientific-technological development.
- The student understands the importance of being precise in the knowledge of the subjects of Physics, Chemistry, and Technology in secondary education.
- The student is able to relate scientific and technological concepts and their contextualization
- The student knows the historical development of the concepts and how to use them in the learning process. As well as the importance of adapting the content to the student's prior knowledge.
- The student is aware of the advances and novelties taking place in Physics, Chemistry and Technology.
- The student acquires the ability to starting up innovation projects based on scientific reasoning.

4. OBJECTIVES
To know the historical development of the concepts in Physics and Chemistry and Technology.
To relate concepts of the subjects with daily situations and how they can be applied.
To Identify the conceptual problems that may arise in the learning of the subjects , based on the historical development of knowledge.
To place Physics and Chemistry and Technology in relation to each other and to other disciplines.
To know the current development fields of Physics, Chemistry and Technology.
To know sources of knowledge generation for students.
To think on the role of science and its meaning in secondary education.

6. SUBJECT PROGRAM	
CONTENTS	
1	Training complements: Nature of Science. Genesis of school knowledge.
2	General principles: historical evolution of scientific knowledge and of technological development and current advances.
3	Historical development of Physics and Chemistry. Teaching implications.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Tasks at the classroom	Others	No	Yes	10,00
Tasks	Work	No	Yes	60,00
Final exam.	Written exam	Yes	Yes	30,00
TOTAL				100,00

Observations

It is understood that university students have assumed linguistic abilities in relation to oral and written expression. Therefore, orthographic (spelling, accentuation and punctuation), grammar and lexical correction is essential and compulsory in the works and exams carried out as an essential condition to pass the subject.

PLAGIARISM
Regarding fraudulent assessment (plagiarism), the mark will be in accordance with the provisions of article 54.1 of the Regulations for assessment processes at the University of Cantabria: “The fraudulent assessment will directly imply the suspense mark '0' in the subject'.

CITATION GUIDELINES

The Faculty Board has approved that the Faculty adopts the APA Guidelines for all academic works . Through the link provided below, you can access the support resources offered by the BUC in relation to these guidelines :
http://web.unican.es/buc/recursos/guias-y-tutoriales/guia?g=28

GRADING IN CASE OF FAILURE TO MEET THE MINIMUM PASSING GRADE IN AN EXAM:

If a student does not achieve the minimum required grade to pass an evaluation exam, the overall grade for the course will be the lower value between 4.9 and the weighted average of all evaluation exams, as established in Article 35 of the University of Cantabria’s Regulation on evaluation processes .

CONTINUOUS ASSESSMENT:

As described in the evaluation methodology, students will have been assessed on more than 40% of the course content before the end of classes, including in-class work and homework. In this way, compliance is ensured with Article 17 of the University of Cantabria’s Regulation on evaluation processes ('by the end of the class period, the student must have completed evaluation activities that account for at least 40% of the final grade for the course').

EXTRAORDINARY EXAM SESSION:

Students who do not pass the course in the regular exam session will have an extraordinary exam similar to the final exam of the regular session, which will account for 100% of the final grade.

Observations for part-time students

Part-time students are entitled to a single assessment, as established in Article 24 of the University of Cantabria’s Regulation on evaluation processes. The student may undergo a single assessment process. The single assessment grants the student the right to obtain the same grade as those students who undergo continuous assessment processes. The single assessment may consist of an examination and/or submission of coursework. Exceptionally, there may be a requirement to attend and pass certain in-person activities (laboratory classes, practicals, seminars, etc.). Part-time students who attend classes regularly may opt for the same assessment system as full-time students.

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
1. Sánchez del Río, C. (1986). Los principios de la Física en su evolución histórica. Madrid: Editorial de la Universidad Complutense.
2. Cassidy, D., Holton, G., & Rutherford, J. (2002). Understanding physics. New York, NY: Springer.
3. Holton, G., & Brush, S. G. (2001). Physics, the human adventure: From Copernicus to Einstein and beyond (3rd ed.). New Brunswick, NJ: Rutgers University Press.