

SUBJECT TEACHING GUIDE

M1107 - Recent and Historical Development in Physics, Chemistry and Technology, and School Knowledge Master's Degree in Secondary Education Teacher Training

Academic year 2022-2023

| 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 | M1107 - Recent and Historical Development in Physics, Chemistry and Technology, and School Knowledge | | | | |
| Number of ECTS credits allocated | 4,5 | Term | Semester based (2) | | |
| Web | https://personales.unican.es/fernancv/master/ | | | | |
| Language of instruction | Spanish | English Friendly | Yes | Mode of delivery | Face-to-face |

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|------------------|--|
| Department | DPTO. FISICA APLICADA |
| Name of lecturer | VIDAL FERNANDEZ CANALES |
| E-mail | vidal.fernandez@unican.es |
| Office | E.T.S. de Náutica. Planta: + 2. DESPACHO (247) |
| Other lecturers | JOSE JULIO GÜEMEZ LEDESMA CARLOS SAINZ FERNANDEZ MANUEL DE PEDRO DEL VALLE JOSE ANGEL MIER MAZA |

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. COURSE ORGANIZATION

CONTENTS

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|---|---|
| 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 | No | 10,00 |
| Tasks | Work | No | Yes | 50,00 |
| Final exam. | Written exam | No | Yes | 40,00 |
| TOTAL | | | | 100,00 |
| Observations | | | | |
| <p>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.</p> <p>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'.</p> <p>CITATION RULES The Center Board approved that the Faculty assumes the APA Standards for all academic works as citation criteria .</p> | | | | |
| Observations for part-time students | | | | |
| <p>The evaluation procedure for part-time students who do not attend class regularly will consist of taking an exam on the official date established by the Faculty. The exam will cover all the content worked in class. The student will contact the teacher at the beginning (or before) of the school period.</p> | | | | |

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Autor: Sánchez del Río, Carlos.

Título: Los principios de la Física en su evolución histórica

Editorial: Madrid : Editorial de la Universidad Complutense, 1986.

Descripción física: 316 p.

ISBN: 84-7491-183-4

Autor: David Cassidy, Gerald Holton, James Rutherford.

Título: Understanding physics /

Editorial: New York [etc.] : Springer, cop. 2002.

Descripción física: 851 p.

Undergraduate texts in contemporary physics

ISBN: 0-387-98756-8

Autor: Holton, Gerald and Stephen G. Brush.

Título: Physics, the human adventure : from Copernicus to Einstein and beyond.

Edición: 3rd ed.

Editorial: New Brunswick : Rutgers University Press, cop. 2001.

Descripción física: 582 p. ; 26 cm.

ISBN: 0-8135-2907-7

