

## SUBJECT TEACHING GUIDE

G66 - History and Panorama of Research and Applications in Physics

Double Degree in Physics and Mathematics  
Degree in Physics

Academic year 2022-2023

1. IDENTIFYING DATA					
Degree	Double Degree in Physics and Mathematics Degree in Physics			Type and Year	Compulsory. Year 4 Compulsory. Year 3
Faculty	Faculty of Sciences				
Discipline	Subject Area: History and the Panorama for Research and Applications in Physics Module: Orientation				
Course unit title and code	G66 - History and Panorama of Research and Applications in Physics				
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. FISICA MODERNA				
Name of lecturer	IVAN VILA ALVAREZ				
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Other lecturers	ERNESTO ANABITARTE CANO JUAN MANUEL LOPEZ MARTIN FRANCISCO JESUS CARRERA TROYANO				

### 3.1 LEARNING OUTCOMES

- To get a knowledge of the historical development of the science, the concepts evolution developed in the field of physics
- To understand the close interdependence between basic science and technological developments
- To have a knowledge of the primary role of physics in front line fields of science and technology
- To understand the interdisciplinarity between Science and Technology in the present time and the situation of physics in that context, both from basic as well as applied direction

#### 4. OBJECTIVES

- To know the concepts evolution and fundamental ideas in Physics
- To understand the close interdependence between basic science and technological developments
- To understand the correlation between science and applied physics
- To know the present situation of physics research and the most outstanding projects, both of basic and applied physics
- To know the most outstanding applications derived from physics and its insertion in modern technology
- To acquire a wide perspective of the present situation of the research in basic and applied physics in order to choose adequately future study matters

#### 6. COURSE ORGANIZATION

##### CONTENTS

1	Physics up to XVII century 1) Origins: Greece, Middle Age, Renaissance 2) The Copernican Revolution. Heliocentrism 3) The newtonian revolution
2	Mechanics since XVIII century, relativity, astrophysics + Seminars of astronomy, astrophysics and cosmology
3	Thermodynamics since XVIII century, statistical mechanics, complex systems + specialized seminars
4	Electricity, magnetism, optics, since XVIII century + Seminars of electromagnetism and optical technology
5	Quantum, Atomic, Nuclear and Particle Physics + specialized seminars
6	oral work presentations and evaluation exam

#### 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Description Blocs 1 to 5	Work	No	Yes	20,00
Description Oral presentation at the classroom	Others	No	Yes	20,00
Description Active participation	Others	No	No	20,00
Description Final exam	Written exam	Yes	Yes	40,00
<b>TOTAL</b>				<b>100,00</b>

##### Observations

The continuous evaluation amounts to 60% of the final note. The other 40% will come from the final exam.  
The final qualification will be the weighted average note from the previous qualifications  
In case to be needed to recover in the extraordinary exam will be made with the same characteristics than the final exam previously cited which will amount for a global qualification of 80% of the final note

##### Observations for part-time students

As far as possible, and in accordance with the teacher, will be tried to facilitate the monitoring of the subject course

## 8. BIBLIOGRAPHY AND TEACHING MATERIALS

### BASIC

"Physics, the Human Adventure", G.Holton and S. Brush, Rutgers University Press 2001

"Los principios de la física en su evolución histórica", C. Sánchez del Río, Ed. Universidad Complutense 1986

"El desafío del Universo", Telmo Fernández y Benjamín Montesinos. Espasa Calpe 2007