

SUBJECT TEACHING GUIDE

G1956 - Physics

Degree in Civil Engineering First Degree in Civil Engineering

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Degree in Civil Engineering First Degree in Civil Engineering			Type and Year	Core. Year 1 Core. Year 1
Faculty	School of civil Engineering				
Discipline	PHYSICS FOR CIVIL ENGINEERING				
Course unit title and code	G1956 - Physics				
Number of ECTS credits allocated	6	Term	Semester based (1)		
Web	https://moodle.unican.es				
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. CIENCIA E INGENIERIA DEL TERRENO Y DE LOS MATERIALES				
Name of lecturer	PEDRO SERRANO BRAVO				
E-mail	pedro.serrano@unican.es				
Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 1. DESPACHO PROFESORES (1055)				
Other lecturers	DIEGO FERREÑO BLANCO				

3.1 LEARNING OUTCOMES
- To understand the mechanics of material points and solving advanced problems.
- To solve problems of fluid statics, centers and buoyancy forces.
- To understand and solve problems of Thermometry, Calorimetry and energy exchanges.
- To calculate electric and magnetic fields created by different charge distributions and to understand and solve their practical effects.

4. OBJECTIVES

- To understand the fundamental laws of Newtonian Mechanics.
- To know the static and dynamic behavior of ideal fluids as well as their most important applications.
- To understand and apply the fundamental principles of Thermodynamics to practical cases.
- To understand and apply the basic principles of Electromagnetic Theory
- To develop basic experimental analyses of the previous subjects.

6. COURSE ORGANIZATION

CONTENTS	
1	Vector Calculus. Scalars and vectors.
2	Material point kinematics and dynamics. Energetic approach to dynamics.
3	Fluid mechanics. Ideal fluid statics. Ideal fluid dynamics.
4	Thermodynamics. Thermal properties of matter. State equations. First Law of thermodynamics. Second principle of thermodynamics
5	Electromagnetic Theory. Electrostatic field and potential. Study of balanced conductors. Study of dielectric media. Stationary electrical currents. Static magnetic field

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Midterm exam 1 in October and January	Written exam	No	Yes	35,00
Midterm exam 2 in January	Written exam	No	Yes	35,00
Practical exam in the laboratory	Laboratory evaluation	No	No	15,00
The student's participation in the development of the course and the completion of test-type exercises on the Moodle platform during the course will be evaluated.	Activity evaluation with Virtual Media	No	No	15,00
TOTAL				100,00

Observations

The final exams of January or February will be written and will consist of the recovery of the midterm evaluations, exclusively in the event that they have been failed.

The evaluation of the laboratory practices will be considered during the realization of the same, plus the practical exam, which will consist of the realization by the student of a practical carried out in the course.

Only under duly justified reasons (e.g. health issues) the assessment tests may be arranged remotely, with prior authorization from the Centre's Management.

Observations for part-time students

The evaluation for part-time students will be the same as for full-time students except for the section on participation in the development of the course. In this case, the percentage of each partial will be 40% and the percentage of laboratory practices will be 20%.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

- Sears F.W., Zemansky M.W., Young H.D., Física Universitaria, Addison Wesley, 1988.
- Tipler P.A., Física (2 Volúmenes), Reverté, 1988.
- Serway R. A., Jewet J. W. Física para Ciencias e Ingeniería. Cengage Learning.
- Giancoli D. C., Física para Ciencias e Ingeniería. Ed. Pearson Educación.
- García Calderón, M.A., Cuadernos de Física I. Ediciones TGD. Edificio Interfacultativo. Universidad de Cantabria, 2003.
- García Calderón, M.A., Cuadernos de Física II. Ediciones TGD. Edificio Interfacultativo. Universidad de Cantabria, 2003.

La documentación para usar en las clases teóricas y prácticas se publicará en el Campus Virtual , plataforma Moodle.