



## Teaching Guide

Identifying Data				2024/25
Subject (*)	FÍSICA I	Code	730G04003	
Study programme	Grao en Enxeñaría en Tecnoloxías Industriais			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	1st four-month period	First	Basic training	6
Language	Spanish			
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría Naval e Industrial			
Coordinador	Nicolas Costa, Gines	E-mail	gines.nicolas@udc.es	
Lecturers	Mateo Orenes, Maripaz Nicolas Costa, Gines	E-mail	paz.mateo@udc.es gines.nicolas@udc.es	
Web				
General description	Description of one of the parts of Physics: Mechanics			

## Study programme competences / results

Code	Study programme competences / results
A2	FB2 Comprensión e dominio dos conceptos básicos sobre as leis xerais da mecánica, termodinámica, campos e ondas e electromagnetismo e a súa aplicación para a resolución de problemas propios da enxeñaría.
B1	CB1 Que os estudantes demostren posuír e comprender coñecementos nunha área de estudo que parte da base da educación secundaria xeral e adoita encontrarse a un nivel que, aínda que se apoia en libros de texto avanzados, inclúe tamén algúns aspectos que implican coñecementos procedentes da vangarda do seu campo de estudo
B2	CB2 Que os estudantes saiban aplicar os seus coñecementos ao seu traballo ou vocación dunha forma profesional e posúan as competencias que adoitan demostrarse por medio da elaboración e defensa de argumentos e a resolución de problemas dentro da súa área de estudo
B3	CB3 Que os estudantes teñan a capacidade de reunir e interpretar datos relevantes (normalmente dentro da súa área de estudo) para emitiren xuízos que inclúan unha reflexión sobre temas relevantes de índole social, científica ou ética
B6	B3 Ser capaz de concibir, deseñar ou poñer en práctica e adoptar un proceso substancial de investigación con rigor científico para resolver calquera problema formulado, así como de comunicar as súas conclusións ?e os coñecementos e razóns últimas que as sustentan? a un público tanto especializados como leigo dun xeito claro e sen ambigüidades
B7	B5 Ser capaz de realizar unha análise crítica, avaliación e síntese de ideas novas e complexas
B8	B7 Deseñar e realizar investigacións en ámbitos novos ou pouco coñecidos, con aplicación de técnicas de investigación (con metodoloxías tanto cuantitativas como cualitativas) en distintos contextos (ámbito público ou privado, con equipos homoxéneos ou multidisciplinares etc.) para identificar problemas e necesidades
B9	B8 Adquirir unha formación metodolóxica que garanta o desenvolvemento de proxectos de investigación (de carácter cuantitativo e/ou cualitativo) cunha finalidade estratéxica e que contribúan a situarnos na vangarda do coñecemento
C1	C3 Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
C5	C7 Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida.

## Learning outcomes

Learning outcomes	Study programme competences / results



Knowledge of the basic concepts about the general laws of mechanics and their application for the resolution of engineering problems.	A2	B1 B2 B3 B6 B7 B8 B9	C1 C5
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Contents	
Topic	Sub-topic
The following chapters and lessons develop the contents established in the Verification Report card	Kinematics Statics Dynamics
Chapter I INTRODUCTION	Lesson 1 Introduction to Physics Lesson 2 Physical magnitudes Lesson 3 Vector magnitudes
Chapter II STATICS OF THE PARTICLE, THE PARTICLE SYSTEM AND THE RIGID SOLID	Lesson 4 Statics
Chapter III KINEMATICS	Lesson 5 Point kinematics Lesson 6 Relative movement Lesson 7 Kinematics of the solid
Chapter IV DYNAMICS OF THE PARTICLE	Lesson 8 Dynamics of the particle Lesson 9 Work and energy
Chapter V DYNAMICS OF THE PARTICLE SYSTEM AND THE RIGID SOLID	Lesson 10 Dynamics of particle systems Lesson 11 Dynamics of the rigid solid

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A2 B1 B7 C5	30	33	63
Problem solving	A2 B1 B2 B3 B6 B7 B8 B9	20	36	56
Laboratory practice	A2 B1 B2 B3 B7 C1	10	15	25
Mixed objective/subjective test	A2 B2	0	4	4
Personalized attention		2	0	2

(\*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies	
Methodologies	Description
Guest lecture / keynote speech	Oral presentation complemented with the use of audiovisual media and the introduction of some questions addressed to students, in order to transmit knowledge and facilitate learning. Theory classes on the blackboard. Recommended assistance
Problem solving	Technique by means of which a specific problematic situation must be solved, based on the knowledge that has been worked on, which can have more than one possible solution. Resolution by the teacher and by the students of the proposed exercises. Recommended assistance
Laboratory practice	Methodology that allows students to learn effectively through the realization of practical activities, such as demonstrations, exercises, experiments and research. Mandatory attendance
Mixed objective/subjective test	Test that integrates questions about the theoretical and practical contents of the subject



## Personalized attention

Methodologies	Description
Laboratory practice	Discussion about the different aspects of the subject: theory, problems, practices. Students with recognition of part-time dedication DO NOT have an academic exemption from attendance exemption for Laboratory Practices, although they will be given facilities regarding the dates of completion prior communication

## Assessment

Methodologies	Competencies / Results	Description	Qualification
Mixed objective/subjective test	A2 B2	It consists of a partial non-eliminatory test in the middle of the quadrimester and a final test	90
Laboratory practice	A2 B1 B2 B3 B7 C1	Mandatory: Unjustified faults are not allowed	10

## Assessment comments

There will be a partial non-eliminatory test throughout the quadrimester for the continuous evaluation and a final test coinciding with the date of the exam approved in the Center Meeting. The final test will consist of a part of theory and a part of problems of the whole of the subject. The attendance and realization of the Laboratory Practices is mandatory only the first time that the student enrolls in the subject, being essential this realization for the overcoming of the subject. Once the practices have been approved, the qualification obtained in them will be kept for the necessary time until the student passes the entire subject. In this sense, once the practices have been approved, it is not necessary to do them again in subsequent calls (courses), although, if required, the student may carry out again the practices with their consequent qualification, in which case the last qualification obtained in the practices will be applied for the evaluation of the subject. The weight in the qualification of the Laboratory Practices is established in the table. The final grade will be calculated according to the following formula:  $0.1 * PR + 0.9 * (0.4 * T + 0.6 * PB) + 0.1 * PA$  Being PR: Note of practices; T: Note of theory of the final exam; PB: Note of problems of the final exam; PA: Note of the Partial exam. All notes calculated on 10. The maximum final grade that can be achieved in the subject is a 10. The evaluation criteria in the 2nd opportunity and in the advance call are the same as those in the 1st opportunity. In case of not having carried out the Laboratory Practices, students with recognition of part-time dedication or with academic dispensation DO NOT have an academic exemption of attendance exemption for such practices, although they will be given facilities regarding the dates of completion prior communication. The criteria and evaluation activities for those students will be the same as for the rest of the students and are indicated in the table.

## Sources of information

<b>Basic</b>	<ul style="list-style-type: none"> <li>- Bedford A., Fowler W. (1996). Mecánica para ingeniería: Estática. Addison-Wesley iberoamericana</li> <li>- Bedford A., Fowler W. (1996). Mecánica para ingeniería: Dinámica. Addison-Wesley iberoamericana</li> <li>- Tipler P.A. (2004). Física para la ciencia y la tecnología. Reverté</li> <li>- Serway R.A., Jewett J.W. (2008). Física: para ciencias e ingenierías. Cengage Learning</li> <li>- Alonso M., Finn E. (1986-1995). Física. Addison-Wesley</li> <li>- Beer F.P., Johnston E.R., Eisenberg E.R. (2007). Mecánica Vectorial para ingenieros. McGraw-Hill</li> <li>- Sears, Zemansky, Young (1986-1998). Física Universitaria. Addison-Wesley</li> <li>- Giancoli D.C. (1997). Física. Prentice Hall</li> <li>- Scala J.J. (1995). Análisis vectorial. Reverté</li> </ul>
<b>Complementary</b>	

## Recommendations

Subjects that it is recommended to have taken before

Subjects that are recommended to be taken simultaneously

CÁLCULO/730G04001

Subjects that continue the syllabus

