



## Teaching Guide

Teaching Guide				
Identifying Data				2022/23
Subject (*)	Physics 1		Code	730G05002
Study programme	Grao en Enxeñaría Naval e Oceánica			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	1st four-month period	First	Basic training	6
Language	SpanishGalician			
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría Naval e Industrial			
Coordinador	Saavedra Otero, Emilio	E-mail	emilio.saavedra@udc.es	
Lecturers	Saavedra Otero, Emilio	E-mail	emilio.saavedra@udc.es	
Web				
General description	Comprensión e dominio dos conceptos básicos sobre as leis xerais da mecánica e ondas , así como da súa aplicación para resolver problemas propios da enxeñaría.			

## Study programme competences

Code	Study programme competences
A2	Understanding and domination of the basic concepts on the general laws of the, thermodynamics, mechanics, fields and waves and electromagnetism and its application for the resolution of problems characteristic of the engineering
B1	That the students proved to have and to understand knowledge in an area of study what part of the base of the secondary education, and itself tends to find to a level that, although it leans in advanced text books, it includes also some aspects that knowledge implicates proceeding from the vanguard of its field of study
B3	That the students have the ability to bring together and to interpret relevant data (normally in its area of study) to emit judgments that include a reflection on relevant subjects of social, scientific or ethical kind
B5	That the students developed those skills of learning necessary to start subsequent studies with a high degree of autonomy
B6	Be able to carrying out a critical analysis, evaluation and synthesis of new and complex ideas.
C1	Using the basic tools of the technologies of the information and the communications (TIC) necessary for the exercise of its profession and for the learning throughout its life.
C5	Assuming the importance of the learning as professional and as citizen throughout the life.

## Learning outcomes

Learning outcomes	Study programme competences		
Understanding and know-how of static, kinematic, dynamic, waves, and their applications for the resolution of engineering situations.	A2	B1 B3 B5 B6	C1
Assume as a professional and citizen the importance of continuous learning throughout life.			C5

## Contents

Topic	Sub-topic
The following chapters expand the topics that the Memoria de Verificación stipulates:	magnitudes, physical unities and dimensions, vectors, kinematics, statics, dynamics of particles, dynamics of a sistem of particles and dynamics of rigid solid, fluid mechanics and mechanical waves.



Chapter I INTRODUCTION	Section 1 Introduction Section 2 Vectors Section 3 Physical magnitudes
Chapter II STATIC EQUILIBRIUM	Section 4 Equilibrium of particles Section 5 Systems of forces Section 6 Equilibrium of rigid bodies
Chapter III KINEMATICS	Section 7 Kinematics of particles Section 8 Relative movement
Chapter IV DYNAMICS OF A SINGLE PARTICLE	Section 9 Principles Section 10 Work and energy
Chapter V DYNAMICS OF RIGID BODIES	Section 11 Dynamics of particles systems Section 12 Dynamics of rigid bodies
Chapter VI DYNAMICS OF DEFORMABLE MEDIA	Section 13 Deformable media Section 14 Statics of fluids Section 15 Dynamics of fluids
Chapter VII Mechanical waves	Section 16 Wave movement Section 17 Sound

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student's personal work hours	Total hours
Guest lecture / keynote speech	A2 B6 C5	30	30	60
Problem solving	B1 B3 B5 C1	20	30	50
Laboratory practice	B5 C1	10	0	10
Mixed objective/subjective test	A2 B1 B3 B6	4	6	10
Mixed objective/subjective test	A2 B1 B3 B6	4	6	10
Personalized attention		10	0	10
(*)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	Largest group. Explanation and resolution of fundamentals. Comments on bibliography
Problem solving	Medium group: Study of cases and problem solving.
Laboratory practice	Laboratory: students will perform 4 sessions (2 h per session)
Mixed objective/subjective test	The course is divided in 2 parts, each one with their exam.  The first part includes: introduction, static and kinematics.  The exam will be held on a date fixed by the official calendar.
Mixed objective/subjective test	The second exam includes: dynamics of particles, dynamics of rigid bodies, continuous media and waves.  The date coincides with the final exam which will be approved by Xunta de Centro.



## Personalized attention

Methodologies	Description
Problem solving	<p>Tutorials about lectures, exercises, and other situations in relation with the course. Besides face-to-face tutorial, students could comment their questions by means of the e-mail and Teams.</p> <p>Students with academic exemption must:</p> <ul style="list-style-type: none"> <li>i attend to the exams,</li> <li>ii carry out the lab experiments, to do that, lectures are able suitable dates</li> <li>iii deliver the task in the delivery date, the exercises can be deliver both by hand and electronically. and can do the tutoring telematically.</li> <li>iv Students with academic dispensation are also required to take the self-assessment tests for each theory topic..</li> </ul>

## Assessment

Methodologies	Competencies	Description	Qualification
Laboratory practice	B5 C1	<p>? Attendance at lab is compulsory.</p> <p>? To get a final qualification students must make a number sessions fixed by the professor.</p> <p>? They will be not admitted lack of assistance without justification</p> <p>? The score of the practices represents 10% of the total.</p>	10
Mixed objective/subjective test	A2 B1 B3 B6	<p>? There will be a Objective test that will be held during the four-month period. This exam includes the chapters of introduction to Physics, estatics and kinematics</p> <p>? The test will be written both Galician and Spanish.</p> <p>? The contribution of this objective test has a maximum score of 3 resulting in 30% of the total.</p> <p>The test will be in two parts: theory (T with a maximum score of 1.2) y problems solving (P with a maximum score of 1). Homeworks H1 are also considered.</p> <p>? The total qualification is given by:</p> <p>NOTA (E1)= T+ P+ H1</p> <p>? If a lack of attendance before the exam</p> <p>NOTA(E1) = T+ P+ H1 - 0.5</p>	22



Mixed objective/subjective test	A2 B1 B3 B6	<p>? The final Objective test will include the second part of the course: dynamics of particles, dynamics of rigid solid, fluids and waves.</p> <p>? The test will be written both Galician and Spanish.</p> <p>? The maximum score of this exam is six, 60% of the total.</p> <p>? The score distribution is similar to the previous one: T with a maximum score of 2.4 and P with a maximum score of 2. H2 will be added to the score. Then, <math>NOTA(E2) = T + P + H2</math></p> <p>? If a lack of attendance before the exam, <math>NOTA(E2) = T + P + H2 - 0.5</math></p> <p>? The exam date will coincide with the final exam date to be approved in the Xunta de Centro.</p>	44
Guest lecture / keynote speech	A2 B6 C5	<p>- Attendance at court sessions is mandatory. Self-assessment tests are available at the platform Campus Virtual.</p> <p>- Students with Academic Dispensation are also required to take the self-assessment tests for each topic.</p>	0
Problem solving	B1 B3 B5 C1	<p>- Attendance at problem-solving classes is mandatory.</p> <p>? In total, there will be 60 problems (30+30). A minimum limit is required to score, 80 % of right solutions. Score will be proportional to the right solutions.</p> <p>The solved exercises will only be admitted at the demanded dates.</p> <p>? Attendance at tutorial hours is compulsory (4 tutorials per exam, 8 in total). Other the score would be penalised.</p> <p>? The first 30 exercises will be scored from 24 right exercises. The score H1 will start in 0.32 points (when 24 problems are right done) to 0.8 point (when 30 are right).</p> <p>? The 30 exercises, corresponding to the second part, will be scored from 24 right exercises. The score H2 will start in 0.64 points (when 24 problems are right done) to 1.6 point (when 30 are right).</p>	24

## Assessment comments



Final qualification is given by the equation:  $\text{Mark} = \text{Practices} + E1 + E2$

where:

Practices is the score of lab practices, 1 point maximum. E1 is the score of the first Objective test E2 is the score of the first Objective test

The criteria for the second opportunity and extraordinary exams are the same as in the other objective tests.

During the exams, students are only going to be tested

about the parts which will be pointed out by the professors. The test will be written both Galician and Spanish.

The scores of lab and homework will be preserved in the final mark.

The percentage of this test on the final score depends on the part that has to be examined.

The exam date be approved by the Xunta de Centro. Criteria for the

evaluation of objective tests and problem solving

Rubric will be used to

evaluate the competency Understanding and mastery of the

fundamentals about statics, kinematics, dynamics and waves and their

applications to engineering problems. The following

sub-competencies shall be taken into account:

The student has

knowledge about general laws

The student analyzes

problems, identifies magnitudes and their relative importance.

The student uses the

appropriate tools to analyze and to calculate.

The student is

capable of analyzing the coherence of the results.

The student gets

error-free numerical results.

The student expresses

the result with the appropriate units.

## Sources of information

<b>Basic</b>	<ul style="list-style-type: none"> <li>- Francis Sears, Zemansky, Young (1986-1998). Física Universitaria. Addison-Wesley</li> <li>- Tipler, Paul Allen (1992). Física. Reverté</li> <li>- Serway, Raymond A. (1992). Física. McGraw-Hill</li> </ul>
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**Complementary**

## Recommendations

### Subjects that it is recommended to have taken before

### Subjects that are recommended to be taken simultaneously

CÁLCULO/730G02101

EXPRESION GRAFICA/730G02103

ÁLXEBRA/730G02106

ECUACIONES DIFERENCIAIS/730G02110

### Subjects that continue the syllabus

## Other comments

[illegible]

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