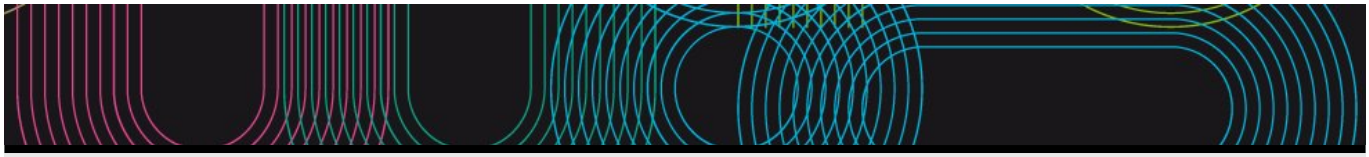

IDENTIFYING DATA				
Physics: Physics I				
Subject	Physics: Physics I			
Code	V11G201V01102			
Study programme	(*)Grao en Química			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	1st
Teaching language	Spanish Galician			
Department				
Coordinator	Martínez Piñeiro, Manuel			
Lecturers	Martínez Piñeiro, Manuel Salgueiriño Maceira, Verónica			
E-mail	mmpineiro@uvigo.es			
Web	http://faitic.uvigo.es			
General description	Physics of first course in the Chemistry Degree, with contents of kinematics, Newton laws and waves			

Competencies	
Code	
A1	Students have demonstrated knowledge and understanding in a field of study that builds upon their general secondary education, and is typically at a level that, whilst supported by advanced textbooks, includes some aspects that will be informed by knowledge of the forefront of their field of study
A2	Students can apply their knowledge and understanding in a manner that indicates a professional approach to their work or vocation, and have competences typically demonstrated through devising and sustaining arguments and solving problems within their field of study
B1	Autonomous learning ability
C22	Know and apply the foundations of Physics necessary to understand the theoretical and practical aspects of Chemistry that need it
C29	Demonstrate ability for numerical calculations and interpretation of experimental data, with correct use of units and estimation of uncertainty
D3	Ability to communicate in both oral and written form in Spanish and / or Galician and / or English

Learning outcomes				
Expected results from this subject	Training and Learning Results			
1. Describe the frame of validity of Classical mechanics.	A1 A2	B1	C22 C29	D3
2. Calculate, from the initial state of a mechanical system, the values of his distinct dynamic magnitudes (energy, linear and angular moments).	A1 A2	B1	C22 C29	D3
3. Calculate, given a group of strengths that act on a mechanical system, his temporary evolution, obtaining the corresponding paths and the temporary variation of his physical properties.	A1 A2	B1	C22 C29	D3
4. Explain the importance of the theorems of conservation and apply any of them.	A1 A2	B1	C22 C29	D3
5. Calculate the strength of push on an object in a fluid and relate the pressure, the height and the speed in a fluid in movement.	A1 A2	B1	C22 C29	D3
6. Define and calculate the parameters that characterise the harmonic and standing waves.	A1 A2	B1	C22 C29	D3
7. Determine experimentally different physical magnitudes (density of solids and liquids, superficial tension, specific heat, etc.).	A1 A2	B1	C22 C29	D3

Contents
Topic

Topic 1. Introduction	1. The nature of Physics 2. Consistency and unit conversion 3. Uncertainty and significant figures 4. Vectors (vector sum, vector components, unit vectors, vector product)
Topic 2. Kinematics of a point particle	1. Motion in one dimension Position, median and instant velocity Median and instant acceleration Motion with constant acceleration 2. Motion in two and three dimensions Position and velocity vectors Acceleration vector Parabolic motion Circular motion
Topic 3. Newton's laws of motion	1. Force and interactions 2. First law of Newton 3. Second law of Newton 4. Third law of Newton 5. Linear and angular momentum
Topic 4. Work and kinetic energy	1. Work done by a force. Power 2. Kinetic energy 3. Conservative and non-conservative forces 4. Potential energy 5. Potential energy in the gravitational field 6. Mechanical energy 7. Force and potential energy 8. Principle of conservation of the mechanical energy
Topic 5. Rigid body kinetics	1. System 2. Rigid body 3. Traslation motion 4. Rotation motion around a fixed axis
Topic 6. Particulate system kinetics	1. Systems of particles 2. Center of mass of the system. Motion of c.m.s 3. Ecuations of motion of a system of particles 4. Linear momentum. Conservation of linear momentum 5. Angular momentum. Conservation of angular momentum 6. Work and power 7. Potential and kinetic energy 8. Total mechanical energy
Topic 7. Rigid body dynamics	1. Rotation of a rigid body 2. Moment of inertia 3. Calculation of moment of inertia 4. Theorem of Steiner 5. Momentum of force and of pair of forces 6. Equations of motion of the rigid body 7. Kinetic energy of the rigid body 8. Work 9. Angular momentum. Conservation
Topic 8. Periodic motion	1. Oscillations 2. Simple harmonic motion (SHM) 3. Energy of SHM 4. Applications of the SHM 5. Pendulum 6. Damped oscillations 7. Driven oscillations. Resonance
Topic 9. Mechanical waves	1. Mechanical waves 2. Periodic waves 3. Mathematical description of a wave 4. Velocity of a transverse wave 5. Energy of the wave motion 6. Interference, superposition 7. Stationary waves 8. Normal modes
Lab. Introduction to error analysis	Lab exercises for the introduction to error analysis: 1. Geometrical dimensions 2. Density of a liquid and a solid 3. Surface tension 4. Viscosity

Planning

	Class hours	Hours outside the classroom	Total hours
Presentation	1	0	1
Lecturing	26	52	78
Seminars	23	34	57
Laboratory practical	12	0	12
Objective questions exam	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

	Description
Presentation	general description of the subject, including content, methodology, development and evaluation
Lecturing	In the FAITIC platform information and materials concerning the theoretical lessons will be available for students . a) The specific objectives in each subject are detailed, indicating their motivation and possible applications. b) The methods proposed to reach the different objectives are explained. c) Suggested bibliographic references are listed and commented.
Seminars	a) Exercises and problems, available previously in FAITC platform, will be solved b) Doubts and concepts of difficult understanding will be discussed and explained in detail c) Different problems of the bulletins will be proposed for the students to be resolved individually
Laboratory practical	A script is proposed to prepare the experimental setting, intended to obtain a series of experimental measures on a physical magnitude. Then, the statistical analysis of the data is explained, to determine the uncertainty of the measures made, and the propagation of statistical errors from the experimental data until the final values of the magnitudes to be calculated

Personalized assistance

Methodologies	**Description**
Seminars	Bulletins of questions and problems to be solved by the students will be proposed, and in case of neccessity, students may attend to personal tutories to clarify concepts and help them with their resolutions.
Lecturing	Concepts related with the theory sessions will be asked to the students. In case of need students may attend to personal tutories to clarify concepts and help them with their resolutions.
Tests	**Description**
Objective questions exam	Short questions and problems to be solved by the students

Assessment

	Description	Qualification	Training and Learning Results
Lecturing	Answers to concepts proposed during the session	0	
Seminars	Realisation of exercises of individual form or in group and assistance	0	
Laboratory practical	Preparation of a report containing a description of the experimental setting made, experimental data measured, derivative properties calculated, and statistical analysis of errors of each one of the magnitudes analysed	20	A1 B1 C29 D3
Objective questions exam	1ª announcement to) 1 short proof written (valid if passed until the exam of June). b) In June a final examination allows a second option for those who did not pass the previous test, or to improve the global qualification making the complete examination	80	A1 B1 C22 D3 A2 C29

Other comments on the Evaluation

- If the student does not have qualification along the semester in any in the different sections he will be qualified as Non Presented, (NP).

- July. Evaluation of the second call,a) The qualification of the first partial examination will be conserved if it has been passedb) The student will have the opportunity to pass the subject by doing only this final written examination, or alternatively may apply to this call to improve the global qualification

Sources of information

Basic Bibliography

Young H.D., Freedman R.A., **Física universitaria**, 12, Pearson Educación, 2013

Tipler, P.A., Mosca G., **Física para la ciencia y la tecnología (Vol. 2)**, Reverté, 2010
Taylor, J. R., **An introduction to Error Analysis**, 2, University Science Books, 1997

Complementary Bibliography

Recommendations

Subjects that continue the syllabus

Physics: Physics 2/V11G201V01107

Subjects that are recommended to be taken simultaneously

Mathematics: Mathematics 1/V11G201V01103

Contingency plan

Description

*Descrición
=== EXCEPTIONAL MEASURES SCHEDULED ===
In front of the uncertain and unpredictable evolution of the sanitary alert caused by the COVID- 19, UVigo establishes an extraordinary planning that will activate in the moment in that the administrations and the own institution determine it attending to criteria of security, health and responsibility, and guaranteeing the teaching in a stage non face-to-face or no totally face-to-face. These already scheduled measures guarantee, in the moment that was prescriptive, the development of the teaching of a more agile and effective way when being known previously (or at least long beforehand) by the students and the
faculty through the tool normalised and institutionalised of the educational guides DOCNET.

=== ADAPTATION OF THE METHODOLOGIES ===
* Educational Methodologies non modified
In the situation of teaching no face-to-face the theoretical lessons would be given through the Virtual Classrooms of the Remote Campus,
following the official calendar, and would complement with the proportionate presentations through the platform Faitic, and with self-evaluation questionnaires. The seminars would be given also in the Virtual Classrooms foreseen in the calendar established by the Faculty, to each of the groups in the schedule proposed originally.
* Educational methodologies to be modified
In the situation of teaching no face-to-face, the practices of laboratory collected in the educational guide would substitute by practical exercises of analysis of
data of experiments made in direct by the professor through the platform of the Remote campus. For the follow-up of the work will use the email, the platform *FAITIC and collective through the Virtual Classrooms.
* Mechanism no face-to-face of attention to the students (tutorials)
The *tutorías would carry out in modality no face-to-face, by telematic means (email, virtual rooms of the *profesorado in the Remote Campus, or through the forums of *FAITIC) under the modality of *concertación previous.

* Modifications (if it proceeds) of the contents to give
The contents described in the Educational Guide will not be modified in any case.

=== ADAPTATION OF THE EVALUATION ===
In the case of teaching no face-to-face the methodology of evaluation will not be modified, but all sets will be performed through the Remote Campus or the Faitic platform.