

UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information							
Course: FUNDAMENTALS OF PHYSICS I			Code: 59602				
Type: BASIC			ECTS credits: 6				
Degree: 385 - DEGREE IN TELECOMMUNICATI TECHNOLOGY ENGINEERING				Academic year: 2022-23			
Center: 308 - SCHOOL POLYTECHNIC OF CUENCA				Group(s): 30			
Year: 1			Duration: First semester				
Main language: Spanish			Second language:				
Use of additional languages:			English Friendly: Y				
Web site:			Bilingual: N				
Lecturer: JOAN MIQUEL GALVE ROMERO - Group(s): 30							
Building/Office	Department	Phone number	Email Office hours		Office hours		
Escuela Politécnica de Cuenca/IDR	FÍSICA APLICADA	+34926053217	joanmiquel.galve@uclm.es				

2. Pre-Requisites

Since this is a subject that begins in the first semester, it is not necessary to have specific knowledge of any other subject, although it is necessary the basic knowledge of secondary education, especially in physics and mathem

3. Justification in the curriculum, relation to other subjects and to the profession

The subject of physics of the Degree in Telecommunications Technology Engineering is divided into two subjects belonging to the block of basic subjects of the degree. Fundamentals of Physics I describes the physical laws and

4. Degree competences ach	4. Degree competences achieved in this course						
Course competences							
Code	Description						
E03	Understanding and mastering the basic concepts of the general laws of mechanics, thermodynamics, fields and waves and electromagnetism and their application for solving engineering related problems.						
G02	Correct, oral and written, communication skills.						
G06	Knowledge of basic subjects and technologies, enabling students to learn new methods and technologies, as well as providing great versatility to adapt to new situations						
G13	The ability to look for and understand information, wether technical or commercial in different sources, to relate and structure it to integrate ideas and knowledge. Analysis, synthesis and implementation of ideas and knowledge.						

5. Objectives or Learning Outcom

Course learning outc

Description Correct use of oral and written expression to convey ideas, technologies, results, etc

Use of computer tools for numerical resolution of geometric and numerical problems. Use of acoustic guided waves in acoustic tubes.

Correct handling of the mechanical magnitudes in three dimensions

Modeling of general mechanical problems through mechanical oscillators.

Understanding of the thermodynamic magnitudes on which the acoustic waves are based.

Understanding of the behavior of acoustic waves in three dimensions, both in free propagation and in enclosures. Understanding of the mechanical oscillator system behavior, with and without resistance, as well as their behavior with external disturbances of harmonic type.

Use of the adequate approximation of a wave phenomenon, distinguishing between the geometric approximation and the wave one

Use of formal relationships that link physical magnitudes such as force or energy, with kinematic magnitudes in the resolution of mechanical problems

6. Units / Contents Unit 1: Physical magnitudes

Unit 1.1 Dimensional analysis

Unit 1.2 Errors treatment Unit 1.3 Review operations with vectors Unit 1.4 PRACTICE 1. The measurement and its treatment Unit 2: Kinematics Unit 2.1 Rectilinear motion Unit 2.2 Circular motion Unit 2.3 Simple harmonic motion Unit 2.4 Motion composition Unit 2.5 PRACTICAL EXERCISE. Study of 2D motion using Excel Unit 2.6 PRACTICAL EXERCISE. Calculation of speeds and numerical accelerations using Excel Unit 3: Dynamics Unit 3.1 Forces. Newton ¿s Laws Unit 3.2 Work and energy Unit 3.3 Power Unit 4: Mechanical oscillators Unit 4.1 Damped oscillators Unit 4.2 Forced oscillators Unit 4.3 Electrical analogy. RCL circuit Unit 4.4 PRACTICE 2. Study of the elastic constant of a spring Unit 5: One-dimensional waves. The vibrating rope Unit 5.1 Mechanical waves on a forced rope at one end Unit 5.2 Reflection and transmission of waves on a vibrating string Unit 5.3 Own modes on a finite length string Unit 5.4 PRACTICE 3. Stationary waves on a string Unit 6: Two-dimensional waves. Vibrating membranes Unit 6.1 Two-dimensinal. Helmholtz Equation Unit 6.2 Own modes in 2D Unit 6.3 PRACTICAL EXERCISE. Own modes in a rectangular membrane with Matlab Unit 7: Fundamentals of thermology Unit 7.1 Thermal expansion Unit 7.2 Ideal gases Unit 7.3 Laws of thermodynamics Unit 7.4 Heat transfer Unit 8: Three-dimensional waves. Acoustic waves Unit 8.1 Acoustic wave equation in 3D. Flat waves and spherical waves Unit 8.2 Intensity and intensity level

Unit 8.3 Own modes in rooms

Unit 8.4 Acoustic waveguides ADDITIONAL COMMENTS, REMARKS

The didactic material used in the development of the subject, and which is available in the virtual platform of the course, is:

- Software: Excel and Matlab

- Notes: transparencies of the subject.

7. Activities, Units/Modules and Methodology

- Collection of exercises - Practices manual

Training Activity	Methodology	RD 822/2021)	ECTS	Hours	As	Com Description		
Class Attendance (theory) [ON-SITE]	Lectures	E03 G02 G06	1	25	N	Theoretical classes of the subject in which the syllabus is developed		
Class Attendance (practical) [ON-SITE]	Problem solving and exercises	E03 G02	1	25	N	During the classes there will be demonstrations and exercises of those required points		
Computer room practice [ON-SITE]	Practical or hands-on activities	E03 G02 G06 G13	0.12	3	Y	During the practical sessions, the realization of the practicals and the results obtained will be evaluated in-situ. In the case Y of not being able to attend the sessions for justified reasons, in the ordinary exam there will be a test that allows to pass this part.		
Laboratory practice or sessions [ON-SITE]	Practical or hands-on activities	E03 G02 G06 G13	0.12	3	Y	During the laboratory sessions, the performance of the practices and the results obtained will be evaluated in situ. In Y the case of not being able to attend the sessions for justified reasons, in the ordinary call there will be a test that allows to pass this part.		
Writing of reports or projects [OFF-SITE]	Self-study	E03 G02 G06 G13	1.6	40	Y	In general, for each of the practices a report will be delivered describing the work carried out, and showing the results and analysis, as well as the main conclusions. If plagiarism is detected in any of the deliveries, the grade will be 0 points in that activity, both for the person / group who has plagiarized and for the one who has allowed it (art. 9 REE).		
Study and Exam Preparation [OFF-SITE]	Self-study	E03 G02 G06 G13	2	50	N	- Autonomous work of the student to prepare the subject		
Individual tutoring sessions [ON-SITE]	Guided or supervised work	E03 G02 G06 G13	0.04	1	N	 Resolution of doubts and review of grades 		
Mid-term test [ON-SITE]	Assessment tests	E03 G02 G06 G13	0.04	1	Y	1 or 2 written evaluation tests will be established throughout he semester. This activity will be recovered with a new test in ordinary or extraordinary exams. The fraudulent relatization of the tests will suppose a grade of 0 points (art. 9 REE).		
Final test [ON-SITE]	Assessment tests	E03 G02 G06 G13	0.08	2	Y	Corresponds to the test to be carried out on the date of the ordinary exam. This activity will be recovered with a new test Y on the date of the extraordinary exam. The fraudulent realization of the tests will suppose a grade of 0 points (art. 9 REE).		
	Total:			150				
	Total credits of in-class work: 2.4			Total class time hours: 60				
As Assasship training activity	Total credits of out of class work: 3.6			Total hours of out of class work: 9				

As: Assessable training activity Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System					
Evaluation System	Continuous Non-continuous assessment evaluation*		Description		
Laboratory sessions	20.00%	20.00%	The exercises and delivery questionnaires solved in the classroom and at home, together with the laboratory practices and their public exposure will mean a numerical grade from 0 to 10. This qualification will mean 20% of the total grade of the subject. Students who can not attend laboratory practices should contact the responsible teacher at the beginning of the semester.		
Test	80.00%	80.00%	Proof of progress will be weighted to obtain a numerical score between 0 and 10. This test can be divided into partial tests made throughout the course. where theoretical / practical knowledge will be evaluated. At least 10% of the progress tests must include the individualized grade of the work done in group by the students. This qualification will represent 80% of the total grade of the subject		
Total:	100.00%	100.00%			

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

The final exam will be a global test that allows to overcome separately both the practices and the theoretical / practical contents developed throughout the course for those students who have not passed any of the partial evaluation tests.

Non-continuous evaluation:

The final exam will be a global test that allows to overcome separately both the practices and the theoretical / practical contents developed throughout the course for those students who have not passed any of the partial evaluation tests.

Specifications for the resit/retake exam:

The final exam will be a global test of the whole subject Specifications for the second resit / retake exam: The final exam will be a global test of the whole subject

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