

**COURSE DATA****Data Subject**

<b>Code</b>	34790
<b>Name</b>	Physics II
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2018 - 2019

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1402 - Degree in Telecommunications Electronic Engineering	School of Engineering	1	Second term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1402 - Degree in Telecommunications Electronic Engineering	2 - Physics	Basic Training

**Coordination**

<b>Name</b>	<b>Department</b>
CANTARERO SAEZ, ANDRES	175 - Applied Physics and Electromagnetism
DELGADO PINAR, MARTINA	175 - Applied Physics and Electromagnetism

**SUMMARY**

The course provides the basis of wave mechanics and electromagnetic phenomena from a phenomenological point of view. It begins with the study of wave mechanics with special attention to sound. Here are the basic principles of electromagnetism studying electro and magnetostatic fields in vacuum and material means, after studying the behavior of time-varying fields, components and foundations of circuit theory and, finally, the course finished studying the basic characteristics of electromagnetic waves.

**PREVIOUS KNOWLEDGE**



### Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

### Other requirements

Knowledge of Physics, Chemistry and Mathematics Bachelor level or similar.

## OUTCOMES

### 1402 - Degree in Telecommunications Electronic Engineering

- G3 - Acquisition of the knowledge of the basic and technological subjects that allows students to learn new methods and theories and endows them with the versatility to adapt to new situations.
- G4 - Ability to solve problems with initiative, decision-making and creativity, and to communicate and transmit knowledge, abilities and skills, understanding the ethical and professional responsibility of the activity of a telecommunications technical engineer.
- B3 - Understand and master the basic concepts of the general laws of mechanics, thermodynamics, fields and waves and electromagnetism their application to solve engineering problems.

## LEARNING OUTCOMES

Understanding and mastery of concepts and basic electromagnetic wave and its application to solving problems of engineering.

Knowledge of the principles and technologies that enable them to learning new methods and to adapt to new situations.

Ability to solve problems, apply knowledge creatively and communicate knowledge in the field of engineering.

## DESCRIPTION OF CONTENTS

### 1. Oscillation movement.

Wave phenomena. Wave Equation. Velocity of propagation. Harmonic solution. Energy and intensity of a wave.

### 2. Acoustic.

Pressure waves. Response of the human ear.



**3.**

**Electrostatic field in vacuum.**

Coulomb's law. Electric field. Gauss theorem. Potential. Work.

**4.**

**Electrostatic field in material media.**

Electric dipoles. Media Bias Materials. Relative dielectric permittivity. Driver charged in equilibrium. Electricity, resistivity.

**5.**

**Static magnetic field in vacuum.**

Ampere's Law. Magnetic Field. Biot and Savart. Ampère theorem.

**6. Static magnetic field in material media.**

Magnetic dipoles. Bias material means. Relative magnetic permeability. Magnetic properties of matter.

**7. Campos variables over time.**

Faraday's law of induction. Inductive devices. Displacement current.

**8. Electrical circuits.**

Basic theorems. DC and AC circuits.

**9. Electromagnetic waves.**

Wave equation. Solution harmonic electromagnetic spectrum. Quantization of energy.



## WORKLOAD

ACTIVITY	Hours	% To be attended
Classroom practices	25,00	100
Theory classes	25,00	100
Laboratory practices	10,00	100
Study and independent work	11,00	0
Preparation of evaluation activities	12,00	0
Preparing lectures	16,00	0
Preparation of practical classes and problem	17,00	0
Resolution of case studies	34,00	0
<b>TOTAL</b>	<b>150,00</b>	

## TEACHING METHODOLOGY

Class work: theory classes, practical classes and laboratory classes.

Student class work: Preparation of classes, problem solving, job preparation and presentation of results.

Individual or group tutoring.

## EVALUATION

The theoretical and practical concepts studied during the course will be assessed by written examination. The exam will be 83% of the total score, the percentage of 50% corresponds to the contents of mechanical waves and electrostatic field, the other 50% to the contents of variable fields and static magnetic field with time.

Experimental contents worked in the lab will involve remaining 17% of the total score, the written results obtained in the laboratory throughout the various sessions presentation will be evaluated.

In addition the subject teacher can define a function of group characteristics complementary ways to assess the work done by the student throughout the course (problem solving, developing themes, lab work, deliverables etc.).

In any case, the evaluation system will be governed by what is established in the Evaluation and Qualification Regulations of the University of Valencia for Degrees and Masters.

(<https://webges.uv.es/uvTaeWeb/MuestraInformacionEdictoPublicoFrontAction.do?accion=inicio&idEdictoSeleccionado=5639>).



## REFERENCES

### Basic

- Referencia b1: Física, P.A. Tipler, Edt.Reverte.
- Referencia b2: Physics for scientists and engineers, R.A. Serway, Edt Sunders Golden Burst Series.