

Physics II

Academic Year: (2023 / 2024)

Review date: 14-04-2023

Department assigned to the subject: Physics Department

Coordinating teacher: TARDIO LOPEZ, MIGUEL MODESTO

Type: Basic Core ECTS Credits : 6.0

Year : 1 Semester : 2

Branch of knowledge: Engineering and Architecture

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Introduction to differential and integral calculus, vector linear algebra and trigonometry.

We recommend taking the Physics course offered by our university to incoming students in all Engineering degrees.

OBJECTIVES

By the end of this course, students will be able to:

- 1.- Know and understand the physical principles of electricity and magnetism.
- 2.- Apply their knowledge and understanding to identify, formulate and solve problems of electricity and magnetism by using established methods.
- 3.- Design and carry out experiments on electricity and magnetism to interpret the data and draw conclusions from them.
- 4.- Handle correctly the basic devices and systems of electrical measurements for data collection in electricity and magnetism practices.
- 5.- Select and use appropriate tools and methods to solve problems of electricity and magnetism.
- 6.- Combine theory and practice to solve problems of electricity and magnetism.

DESCRIPTION OF CONTENTS: PROGRAMME

Coulomb's law. Electric field. Gauss' law. Electric potential. Conductors. Capacitors, dielectrics and energy. Electric current and RC circuits. Magnetic forces and magnetic fields. Sources of magnetic field. Magnetic materials. Faraday's law of induction. LC and LRC circuits. Electrical oscillations and resonance. Maxwell's Equations. Electromagnetic Waves.

LEARNING ACTIVITIES AND METHODOLOGY

- Lectures and student's presentations and personal work, aimed at the acquisition of theoretical knowledge (3 ECTS credits).
- Practical laboratory sessions of mandatory attendance; practical sessions for small groups, with active and direct interaction between the students and the professor; individual office hours and student's personal work. They are aimed at the acquisition of practical skills related to the syllabus of the course (3 ECTS credits).

ASSESSMENT SYSTEM

The final mark corresponds to the sum of a continuous assessment (CA), contributing 40%, and a written exam, contributing 60%.

The CA will consist of laboratory sessions (with weight 15%), assessment exams and class participation (with weight 25%), complemented with the hand-in of scheduled assignments and tasks and theoretical-conceptual projects and advanced problems.

There will be 4 practical laboratory sessions, that have mandatory attendance, and the final mark will account for students' participation, as well as for the quality of the completion of provided questionnaires, along with their presentation and discussion.

Knowledge, skills and theoretical-practical competences that are non-specifically acquired at the laboratory will be assessed in a continuous way.

The students should achieve a minimum mark of 3 over 10 on the final exam to pass the course.

% end-of-term-examination:	60
% of continuous assessment (assignments, laboratory, practicals...):	40

BASIC BIBLIOGRAPHY

- SEARS, ZEMANSKY, YOUNG & FRIEDMAN Física Universitaria. Volumen 2, Addison-Wesley.
- SERWAY, RA Física para ciencias e ingenierías., Thomson.
- TIPLER, PA Física. Volumen 1 y Volumen 2, Reverté.
- TIPLER, PA & MOSCA, G. Física. Volumen 1 y Volumen 2, Reverté.
- TIPLER, PA. Física. Volumen 1 y Volumen 2., Reverté..