

## Physics II

Academic Year: ( 2020 / 2021 )

Review date: 10-07-2020

Department assigned to the subject: Department of Physics

Coordinating teacher: TARDIO LOPEZ, MIGUEL MODESTO

Type: Basic Core ECTS Credits : 6.0

Year : 1 Semester : 2

Branch of knowledge: Engineering and Architecture

**STUDENTS ARE EXPECTED TO HAVE COMPLETED**

We recommend carrying out the physics course offered our university to incoming students in the fields of Engineering.

**COMPETENCES AND SKILLS THAT WILL BE ACQUIRED AND LEARNING RESULTS.**

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

- 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 measurement 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 students¿ presentations and personal work. They are aimed at the acquisition of theoretical knowledge (3 ECTS credits). Activities will develop synchronously, essentially by means of the Moodle and Blackboard Collaborate platforms.

- Practical laboratory sessions of mandatory attendance (two sessions in the laboratory and two synchronous ones); practical sessions for small groups, with active and direct interaction between the students and the professor; individual office hours and students¿ 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 test, contributing 60%.

The CA will consist of laboratory sessions (weight 15%), assessment tests and class participation (weight 25 %). The assessment tests will be carried out in a synchronous way, by combining the Moodle and Blackboard Collaborate platforms, complemented by the hand-in of scheduled assignments and tasks and theoretical-conceptual work advanced problems.

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

Synchronous mid-terms exams will be conducted in two phases: firstly, a sequential multiple-choice test and a second phase where students must solve some proposed problems. These tests are aimed at the CA of knowledge and theoretical and practical skills, which are not laboratory-specific.

The students should achieve a minimum grade 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..