

Physics

Academic Year: (2022 / 2023)

Review date: 31-05-2022

Department assigned to the subject: Physics Department

Coordinating teacher: TORRESANO ESCOBOSA, JUAN ALBERTO

Type: Basic Core ECTS Credits : 6.0

Year : 1 Semester : 1

Branch of knowledge: Engineering and Architecture

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Mathematics and Physics corresponding to the two sciences courses of the Spanish high school level.

OBJECTIVES

Acquire the knowledge of basic physical phenomena related with engineering.

Understanding the mathematical models involved in general physics.

Understanding and using the scientific method, and scientific language.

Development of reasoning strategies and techniques for analysing and solving problems (PO a).

Analysis and interpretation of experimental data (PO b.).

Dealing with laboratory instruments (PO b).

DESCRIPTION OF CONTENTS: PROGRAMME

Topics covered:

Particle kinematics. Particle dynamics. Coulomb's law. Electric field. Gauss law. Electric potential. Conductors.

Capacitors, dielectrics and field energy. Magnetic forces and magnetic field. Sources of the magnetic field and

magnetic materials. Faraday's induction law. Wave propagation, acoustic and electromagnetic waves.

LEARNING ACTIVITIES AND METHODOLOGY

Online lectures on the specific topics together with a simple guide for problem solving. Provide a theoretical background on physics. (3 ECTS).

Recitation classes, discussion of specific concepts previously addressed, and solving assigned problems. (3 ECTS).

Practical laboratory sessions, the pupils must carry out experimental measurements and analyse the results.

As in previous years, there will be group tutorials scheduled at the beginning of the course after discussing the proposal with the students. These tutorials will take place once the students' school hours finished, usually from 19.00 to 20.00.

ASSESSMENT SYSTEM

In the laboratory, a report of each experiment should be submitted by the student, these reports together with the work performed and the attitude in the laboratory, and test on uncertainty theory and a final group work, accounts for 15% of the final mark. Attendance to laboratory sessions and the delivery of the corresponding reports are compulsory (PO b).

A regular evaluative process is conducted in the recitation classes through short exams, this process accounts for 25% of the final mark. (PO a).

A final exam will be carried out accounting for 60 % of the final mark.

% end-of-term-examination: 60

% of continuous assessment (assignments, laboratory, practicals...): 40

BASIC BIBLIOGRAPHY

- Tipler, PA & Mosca, G. "Physics for Scientists and Engineers" (Vol. 1 & 2, 5th or 6th Ed.), W.H. Freeman and Company, 2003

