

Physics

Academic Year: (2021 / 2022)

Review date: 08-06-2021

Department assigned to the subject: Physics Department

Coordinating teacher: BRIZ PACHECO, SUSANA

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)

Physics and Mathematics at high school level.

Physics: fundamentals of kinematics, dynamics, electric and magnetic field

Mathematics: algebraic operations with vectors, derivatives and integrals

OBJECTIVES

Knowledge of basic physical phenomena in engineering implications.

Understanding mathematical models that explain these phenomena.

Understanding and management of the scientific method and scientific - technical language.

Development of techniques and strategies for the analysis of reasoning and problem solving.

Interpretation and analysis of experimental data. Elemental device management and measurement systems.

DESCRIPTION OF CONTENTS: PROGRAMME

Topics covered:

Particle kinematics. Particle Dynamics. Coulomb's law. Electric Field. Gauss Law. Electric potential. Conductors.

Capacitors, Dielectric and Energy. Electric Current. Magnetic Forces and Magnetic Fields. Sources of Magnetic Field.

Magnetic Materials. Faraday 's law of induction. Wave propagation. Sound and electromagnetic waves.

LEARNING ACTIVITIES AND METHODOLOGY

- Theoretical master classes in synchronous online format
- Discussions in the virtual classroom
- Practical demonstrations in the virtual or face-to-face classroom
- Personal work of the student oriented to the acquisition of theoretical knowledge
- Classes in small groups in face-to-face format, with direct and active interaction between students and teacher. In these classes, the theoretical concepts will be applied to problem solving to check if the concepts have been understood correctly.
- Weekly individual tutoring (up to 4 students)
- Online group tutoring
- Personal work of the student oriented to the acquisition of practical skills related to the program of the subject
- Participation in forums in Aula Global
- Continuous assessment tests for the student to check if they have understood the subject
- Practical laboratory sessions consisting of conducting experiments and analyzing the results. Two practices will be in online format and two others will be face-to-face. All of them are compulsory to pass the subject.

ASSESSMENT SYSTEM

The evaluation of the course will have three contributions: continuous assessment, laboratory work and final exam.

A regular evaluative process is conducted in the theoretical and practical classes through short exams, and exercises proposed during the class or for homework. This continuous assessment accounts for 25% of the final mark.

In the laboratory, a report of each experiment should be submitted by the student. These reports

account for 15% of the final mark . Attendance to laboratory sessions (2 face-to-face and 2 online) and submission of reports by the due date is compulsory to pass the course.

A final exam will be carried out accounting for 60 % of the final mark. In order to apply these percentages, the minimum grade of the final exam will be equal to or greater than 3.

% end-of-term-examination: 60

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

BASIC BIBLIOGRAPHY

- R.A.Serway, J.W. Jewett, Jr, Volumen 1 y 2, (3ª edición) . ¿Física ¿, Thomson Editores. Parninfo S.A. 2003.
- P.A.Tipler , G.Mosca , , ¿ Volumen 1 y 2 (5ª edición) ¿Física para la Ciencia y la Tecnología", Edit. Reverté 2005..
- SERRANO DOMINGUEZ V., GARCIA ARANA, G. Y GUTIERREZ ARANZETA, C. Electricidad y Magnetismo. Estrategias para la resolución de problemas y aplicaciones, Pearson Educación, México, 2001.