29601 - Physics I

Información del Plan Docente

Academic Year	2017/18
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	430 - Bachelor's Degree in Electrical Engineering
ECTS	6.0
Year	1
Semester	Half-yearly
Subject Type	Basic Education
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The learning process to pass the subject is based on the following aspects:

1. Masterclasses where the lecturer will explain the main theoretical concepts as well as will illustrate the application of the theoretical material via exercises and practical cases. Active students' participation is intended in this activity. In parallel, the students should spend self-study time in order to take advantage of the masterclasses.

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2. Laboratory sessions will be scheduled during the semester. Lab sessions' assessment will contribute to the single overall mark. Lab sessions' groups will consist of two or three members.

3. Supervised projects where students will work in problem solving tasks or a practical question proposed by the professor and related with the concepts learned in the subject.

4. Self-study time, learning the subject as well as performing problem solving tasks. This activity is essential for the student's learning process as well as to have success to pass the subject.

5.2.Learning tasks

The planned subject's learning activities are listed as follows:

1:

Masterclasses T1 (43 hours) (classroom activity)

This activity is intended to present the basics of the discipline illustrated with practical examples in order to facilitate the understanding and assimilation of the concepts. Problem solving tasks and illustrative examples will take place in the practical sessions with the cooperation of students. Students will be encouraged to solve prior to the masterclasses some problems proposed by the professor. This activity will take place on-site in the classical classroom.

2:

Laboratory sessions T3 (10 hours) (classroom activity)

Laboratory sessions' scripts will be available for the students in the ADD. Scripts consist of a theoretical introduction and the steps to perform during the lab activity. Reading the script prior to attend to the laboratory session is a must for the student. Writing a full report including the main result is recommended after completing the lab sessions.

3:

Supervised projects T6 (8 hours) (non-classroom activity)

This task could be:

1) Writing of the lab sessions' reports.

2) The professor will propose topics for individual or team works about different subject's parts. Students will be tutored during these tasks.

4:

Study T7 (84 hours) (non-classroom activity)

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It is of importance for the student to devote constant efforts, during the semester, for personal study, problem-solving tasks and writing lab sessions' reports.

5:

Assesment T8 (5 hours) (classroom activity)

The overall assessment is planned at the end of the semester, but the continuous assessment will be a learning tool for formative and summative assessment during the semester.In this way, students can check their learning during the progress of the course.

6:

Tutoring

The professor's tutoring timetable will be available for the student to ask question about the subject.

5.3.Syllabus

The syllabus for proposed to achieve the learning results is listed as follows:

MECHANICS

Principles of mechanics

1. Kinematics.

2. Dynamics.

3. Rigid body dynamics.

4. Statics.

Applied mechanics

5. Oscillatory movement.

6. Elasticity.

7. Fluid dynamics.

THERMODYNAMICS

8. Heat and temperature. Heat transfer.

9. Thermodynamics processes. First principle.

10. Thermal machines. Second principle.

5.4.Course planning and calendar

Schedule for on-site sessions and reports' deadline.

Schedule for the masterclasses, problem-solving sessions and laboratory sessions will be planned by the university center and will be published in the Center's website. The remainder activities will be planned depending on the amount of students and the schedule will be provided in advance.

The professor will inform about the tutoring timetable.

5.5.Bibliography and recommended resources

[BB: Bibliografía básica / BC: Bibliografía complementaria]

- [BB] Sears Zemansky. Física universitaria. Volumen 1 / Hugh D. Young, Roger A. Freedman ; con la colaboración de A. Lewis Ford ; traducción Antonio enríquez brito. - 13ª ed. México [etc.] : Pearson, 2013
- [BB] Tipler, Paul A. Física para la ciencia y la tecnología. Vol. 1, Mecánica , oscilaciones y ondas, termodinámica / Paul A. Tipler , Gene Mosca; [coordinador y traductor, José Casas-Vázquez; traductores, Albert Bramon Planas...[et al.]]. - 6ª ed. Barcelona [etc.] : Reverté, 2010