30006 - Physics II

Información del Plan Docente

Academic Year	2018/19
Subject	30006 - Physics II
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	436 - Bachelor's Degree in Industrial Engineering Technology
ECTS	6.0
Year	1
Semester	Half-yearly
Subject Type	Basic Education
Module	

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

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

Please see the Spanish version.

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. It is based on participation and the active role of the student favors the development of communication and decision-making skills. A wide range of teaching and learning tasks are implemented, such as lectures, guided assignments, laboratory sessions, private/personal study, and tutorials.

Students are expected to participate actively in the class throughout the semester.

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Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials.

Further information regarding the course will be provided on the first day of class.

4.2.Learning tasks

The course includes 6.0 ECTS organized according to:

- Lectures (1.44 ECTS): 36 hours.

- Problem-solving sessions (0.56 ECTS): 14 hours.

- Laboratory sessions (0.4 ECTS): 10 hours.

- Guided assignments (0.6 ECTS): 15 hours.

- Private/personal study (3 ECTS): 75 hours.

Notes:

Lectures: the professor will explain the theoretical contents of the course and solve illustrative applied examples. Lectures run for 3 weekly hours. Although it is not a mandatory activity, regular attendance is highly recommended.

Problem-solving sessions: guided, tutor-led problem-solving in a small group.A full set of problems and exercises will be provided at the beginning of the semester.

Laboratory sessions: sessions will take place every 2 weeks (4+1 sessions) and last 2 hours each. Students will work together in groups actively doing tasks such as practical demonstrations, measurements, calculations, and the use of graphical and analytical methods.

Guided assignments: students will complete assignments, problems and exercises related to concepts seen in laboratory sessions and lectures.

Private/personal study: students are expected to spend about 75 hours to study theory, solve problems, prepare lab sessions, and take exams.

Tutorial: a meeting involving one-to-one or small group supervision, feedback or detailed discussion on a particular topic. The professor's office hours will be posted on Moodle.

4.3.Syllabus

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The course will address the following topics:

Theory sessions

Topic 1. Electric field and electric potential (4 hours)

Topic 2. Gauss' law (2 hours)

Topic 3. Electric field and conductors (2 hours)

Topic 4. Dielectrics (3 hours)

Topic 5. Electric current (2 hour)

Topic 6. Magnetic field and magnetic forces (4 hours)

Topic 7. Ampère's law (2 hour)

Topic 8. Magnetism in matter (2 hours)

Topic 9. Electromagnetic induction (3 hours)

Topic 10. Maxwell's equations (2 hours)

Topic 11. Traveling waves (4 hours)

Topic 12. Superposition and standing waves (3 hours)

Topic 13. Sound and hearing (3 hours)

Laboratory sessions

Session 1. Equipotential lines and electric field mapping

Session 2. I-V curves in direct current circuits

Session 3. Magnetic field measurement with a Hall probe

Session 4. Resonance Modes of a Stretched String

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Examination session.

4.4.Course planning and calendar

For further details concerning the timetable, classroom and further information regarding this course, please refer to the Escuela de Ingeniería y Arquitectura de la Universidad de Zaragoza (EINA) website, https://eina.unizar.es/

4.5.Bibliography and recommended resources