

29802 - Physics I

Syllabus Information

Academic year: 2023/24

Subject: 29802 - Physics I

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

326 - Escuela Universitaria Politécnica de Teruel

Degree: 440 - Bachelor's Degree in Electronic and Automatic Engineering

444 - Bachelor's Degree in Electronic and Automatic Engineering

ECTS: 6.0

Year: 1

Semester: 440-First semester o Second semester

107-First semester

444-First semester

Subject type: Basic Education

Module:

1. General information

Physics I focuses on the fundamentals of mechanics and its more applied aspects such as mechanical oscillations, elasticity and fluid mechanics. It also provides the basic concepts and principles of thermodynamics. As this is a basic training course, this knowledge is focused as a starting point for other subjects of the industrial branch and specific to the degree.

The assessable contents of Physics I, in isolation, do not provide the student with any of the skills that contribute to the achievement of the 2030 Agenda. However, the contents of Physics I are essential for foundation the subsequent knowledge of the rest of the degree, which are more directly related to the SDGs of the 2030 Agenda.

2. Learning results

- Know the fundamental concepts and laws of mechanics and thermodynamics and their application to basic engineering problems.
- Analyze problems that integrate different aspects of Physics I, recognizing the various physical fundamentals underlying a technical application, device or real system.
- Knows the units, orders of magnitude of defined physical quantities and solves basic engineering problems, expressing the numerical result in the appropriate physical units.
- Correctly uses basic methods of experimental measurement or simulation and treats, presents and interprets the data obtained, relating them to the appropriate physical magnitudes and laws.
- Use bibliography, by any of the means currently available, and use clear and precise language in their explanations of physics questions
- Correctly apply the fundamental equations of mechanics to various fields of physics and engineering: kinematics, rigid solid dynamics, oscillations and fluids
- Understand the meaning, usefulness and relationships between magnitudes, moduli and fundamental elastic coefficients used in solids and fluids.
- Perform mass and energy balances correctly in fluid motions in the presence of basic devices.
- Correctly use the concepts of temperature and heat. Apply them to calorimetric, expansion and heat transfer problems.
- Apply the first and second principles of thermodynamics to processes, basic cycles and thermal machines

3. Syllabus

- Kinematics.
- Dynamics of the particle.
- Dynamics of the rigid solid.
- Static
- Mechanical oscillations.
- Elasticity.
- Fluid mechanics.
- Heat and temperature. Heat transfer.
- Thermodynamic processes. First principle.
- Thermal machines. Second principle.

4. Academic activities

Río Ebro Campus (Zaragoza).

The planned learning activities are as follows:

- Lectures (35 horas).
- Problems and cases (15 hours).
- Laboratory practices (10 hours).
- Personal study and work (84 hours).
- Assessment tests (6 hours)

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The planned learning activities are as follows:

- Lectures (30 horas).
- Problems and cases (15 hours).
- Laboratory practices (12 hours).
- Teaching assignments and other activities (12 hours).
- Personal study and work (77 hours).
- Assessment tests (4 hours)

5. Assessment system

The subject will be assessed in the global assessment mode, but an intermediate test will be scheduled during the school period to facilitate the gradual overcoming of the subject.

Río Ebro Campus (Zaragoza).

Assessment throughout the semester.

- Written test of topics 1 to 6 at mid-semester (40% grade). If the grade is at least 4.5 out of 10, this type of evaluation may be continued.
- At the end of the semester, there will be a written test on the date scheduled for the first exam of topics 7 to 10 (40% grade).
- Examination on the laboratory practices, (20% grade), by means of a written test on the date scheduled for the first call, if the practical sessions have been attended.

Global assessment.

- Examination of topics 1 to 10 (80% grade).
- Examination on the laboratory practices, (20% grade), by means of a written exam if the student has attended the practical sessions. Students who have not completed the practical sessions will be additionally evaluated by means of a practical exam in the laboratory.

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Summative assessment throughout the semester (obtain 40% of the maximum grade in each test):

- Intermediate test of the contents developed up to that moment. Does not eliminate subject (20% of the grade).
- Laboratory activity, a report of each practice supervised by the teacher will be made (20% of the grade).
- Overall written test of the subject (60% of the grade).

Global assessment.

- If a 4 has not been obtained in the intermediate test, overall written test of the subject (80% of the grade).
- If a 4 has not been obtained in a lab grade, a test associated with the lab work will be scheduled (20% of the grade).