

27058 - Physics II

Syllabus Information

Academic year: 2024/25

Subject: 27058 - Physics II

Faculty / School: 100 - Facultad de Ciencias

Degree: 647 - Degree in Mathematics

ECTS: 6.0

Year: 1

Semester: Second semester

Subject type: Basic Education

Module:

1. General information

General Physics is a core subject within the degree program. Physics exemplifies the capabilities of mathematics to formalize natural phenomena, propose explanations, and enable the prediction of new phenomena. Mathematics has found material for its own development in the problems of physics. On the other hand, the increasing importance of mathematics as an applied science makes physics a source of inspiration and a challenge for mathematical thinking.

One of the objectives of this subject is to develop and expand students are already familiar with, such as electric charge, electric circuits and concepts such as field (electric and magnetic), work and electric and magnetic energy, electrostatic, magnetostatic and electric currents. Moreover, topics that may be new for students or at least, topics which may not have been studied previously, such as particle and nuclear physics, physics of materials or electromagnetic waves.

Attendance and active participation of students in class, as well as in other teaching activities such as problem solving, laboratory work, consultation with the teacher during tutoring hours, etc., are strongly recommended.

2. Learning results

- Calculate electrostatic fields and potentials for a point source or a symmetric continuum body.
- Solve simple continuum current circuits.
- Calculate the interaction between magnetic fields and currents.
- Describe the phenomena associated to the propagation of an electromagnetic wave.
- Describe the geometric properties of the Lorentz's transform in a specific case.

3. Syllabus

1. Electrostatics.
2. Stationary electrical currents.
3. Magnetostatics.
4. Time-dependent electromagnetic fields.
5. Waves.
6. Introduction to the theory of relativity.

4. Academic activities

Master classes: 33 hours.

Problem solving: 20 hours.

Laboratory: 7 hours.

Study: 84 hours.

Assessment tests: 6 hours.

5. Assessment system

- One written exam consisting of:
 - Problem solving exam (from 65% to 75% of the final grade).
 - Theory exam (from 25% to 35% of the final grade).
- Evaluation of the lab activity and lab questionnaires. Weight 10% of the total grade. There will be lab exam for those students who do not attend the lab.
- Evaluation made along the academic course (class attendance and participation). Among the optional activities that can be evaluated are: preparing an essay on a selected topic from those suggested by the professor and its oral presentation, individually or in small groups. Solving suggested problems that the students hand in. If that is the case there will be an evaluation of the essay, oral presentation and handed problems respectively. The weight of these

activities in the final grade is 10%. In order for this grade to be computed in the final grade of each semester, the student must achieve a minimum grade of 4 out of 10 in the rest of the evaluation activities of the appropriate semester.

Without limiting the right that the student has, according to the current regulations, to assist and, if applicable, pass the subject by taking a global examination.

6. Sustainable Development Goals

- 4 - Quality Education
- 5 - Gender Equality
- 8 - Decent Work and Economic Growth