

27002 - General physics

Información del Plan Docente

Academic Year	2017/18
Faculty / School	100 - Facultad de Ciencias
Degree	453 - Degree in Mathematics
ECTS	12.0
Year	1
Semester	Annual
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 designed for this course is based on the following activities:

1. Lectures where the professor will present the essential aspects of the subject, including the resolution of numerous practical cases.

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2. Problem solving classes, where the students solve the proposed problems.
3. Problems proposed to the students, who will present the solution to the professor in tutoring sessions, either in small groups or individually.
4. Laboratory experiments sessions and preparation of the corresponding reports.

5.2.Learning tasks

1. Lectures on the fundamental aspects of the subject.
2. Active problem solving classes, with several teachers present.
3. Laboratory classes.
4. Preparation and presentation of reports and problems proposed by the lecturer.

5.3.Syllabus

The program of the course is the following:

1. Kinematics.
2. Dynamics of a particle. Newton's laws. Work and mechanical energy.
3. Dynamics of systems of particles. Conservation laws. Collisions.
4. Dynamics of rigid bodies.

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5. Mechanics of deformable solids and fluids.

6. Gravitational interactions. Orbits.

7. Electrostatics.

8. Stationary electrical currents.

9. Magnetostatics.

10. Time-dependent electromagnetic fields.

11. Waves.

12. Introduction to the theory of relativity.

5.4. Course planning and calendar

Calendar of classroom sessions:

The course has 4 classroom sessions of one hour each per week.

At least one weekly session will be dedicated to problem solving, with several lecturers in attendance, that will guide the students in the solution of the problems.

The laboratory sessions will be programmed during the academic year.

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The timetable for the different lectures will be available in the notice boards and in the web page of the University.

5.5. Bibliography and recommended resources

1. Sears & Zemansky's University Physics , Vol. 1 and 2, Addison-Wesley.
2. Tipler, P..A, Mosca, G., Physics for Scientists and Engineers, Vol. 1 and 2, W. H. Freeman.
3. Alonso, M., Finn, E., Physics, Addison-Wesley.
4. French, A. P., Newtonian Mechanics, W. W. Norton & Company.
4. Crawford, F. S. Jr., Waves, McGraw-Hill.
5. Kittel, C., Knight, W. D., Mechanics, McGraw-Hill.
6. Purcell, E. M., Electricity and Magnetism, McGraw-Hill.