

27002 - General physics

Información del Plan Docente

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| Academic Year | 2016/17 |
| Academic center | 100 - Facultad de Ciencias |
| Degree | 453 - Degree in Mathematics |
| ECTS | 12.0 |
| Course | 1 |
| Period | Annual |
| Subject Type | Basic Education |
| Module | --- |

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

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 activities

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.Program

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.Planning and scheduling

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. Tipler, P..A, Mosca, G., Physics for Scientists and Engineers, Vol. 1 and 2, W. H. Freeman.

2. Alonso, M., Finn, E., Physics, Addison-Wesley.

3. 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.