

27102 - Physics

Información del Plan Docente

Academic Year	2018/19
Subject	27102 - Physics
Faculty / School	100 - Facultad de Ciencias
Degree	446 - Degree in Biotechnology
ECTS	9.0
Year	1
Semester	Annual
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)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented divided in two formative activities.

- Formative Activity 1: Acquisition of basic knowledge of Physics (6 ECTS).
Methodology: participatory Lectures in large group.
Tutorials (small and / or individual groups).
Working with Web support
Reporting on topics proposed by the teacher, presentation and discussion in class.
- Formative Activity 2. Troubleshooting and analysis of case studies in small groups in the lab and / or classroom (3 ECTS)

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Methodology: Personal study.
Problem-based learning.
Working in the laboratory.
Prepare reports on laboratory work according to the model proposed by the Professor

4.2. Learning tasks

The course includes the following learning tasks:

- Lectures.
- Practice sessions. Interactive sessions in which on problems.
- Laboratory practical work in small groups.
- Tutorials.

Support using the available resources in the space allocated to the subject in moodle. It will serve as a repository of materials: presentations of topics, exercises, virtual laboratory, etc.

4.3. Syllabus

The course will address the following topics:

- Classical mechanics.
Dynamics of a particle. Newton's laws. Static.
Energy and work. Conservation theorems.
Forces of friction and drag. Elasticity.
- Fluid Mechanics.
Statics of fluids. Ideal fluid dynamics. Real fluids.
Phenomena surface.
- Statistical Mechanics.
Kinetic theory of gases.
Thermal equilibrium and temperature.
- Thermodynamics.
Internal energy. Heat and work. First principle.
Entropy and second principle.
Thermal properties of matter.
- Electromagnetism.
Electrostatics: field and potential.
Dielectrics and conductors.
Stationary electric current.
The static magnetic field.
Electric and magnetic properties of matter.
Electromagnetic waves.
- Optics.
Light propagation. Reflection and refraction.
Diffraction and interference phenomena.
Formation of the optical image. The eye.
- The structure of matter.
The atom and atomic nucleus. Radioactivity. Radiation-matter interaction.
Biological effects of radiation. Dosimetry and radiation protection.

4.4. Course planning and calendar

The period of lectures and practical classes will coincide with the established officially. Available at:
<https://ciencias.unizar.es/grado-en-biotecnologia>.

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The places of classes and practical sessions, as well as the calendar and practice groups will be established in coordination with the rest of teachers at the beginning of the academic year. The Coordinator will produce groups of practices in order not to produce overlaps with other subjects.

Personalized tutoring: 1 hour/month per pupil in groups of 10 students in time to agree with the teacher.

Schedule of submission of papers: each proposed task will appear on the moodle platform along with the date of delivery.

For students enrolled in, places, times and dates of lectures and practical sessions will be published in the Biotechnology Official Bulletin Board of the grade on the platform Moodle at the University of Zaragoza <https://moodle2.unizar.es/add/> and in the moodle course. These channels are also used to communicate enrolled students distribution by groups of practices that will be organized by the coordination of the degree.

Provisional dates are available on the website of the Faculty of Sciences in the corresponding section of the degree in biotechnology: <https://ciencias.unizar.es/grado-en-biotecnologia>. In this web the dates of exams in the section degree in biotechnology are also available.

4.5. Bibliography and recommended resources