Universidad Zaragoza

Year : 2019/20

26403 - Physics

Syllabus Information

Academic Year: 2019/20
Subject: 26403 - Physics
Faculty / School: 100 -

Degree: 296 - Degree in Geology
588 - Degree in Geology

ECTS: 9.0
Year: 588 - Degree in Geology: 1
296 - Degree in Geology: 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, such as lectures, problem-solving sessions and laboratory sessions.

4.2.Learning tasks

This course is organized as follows:

- **Lectures** (50 hours).
- **Problem-solving sessions** (24 hours). In small groups. The students will solve problems related to the topics explained in the theory classes.
- **Laboratory sessions** (16 hours) 16 two-hours sessions in which students will work in groups and apply the knowledge acquired in lectures and problem-solving sessions. In these sessions indications will be provided to the student for an autonomous work, but under supervision of the teacher.

4.3.Syllabus

This course will address the following topics:

Lectures:

- **Topic 1**. Mechanics. Newton's laws. Kinematics. Energy.
- **Topic 2**. Gravitation. Planetary motion.
- **Topic 3**. Mechanical properties of matter. Elasticity.
- **Topic 4**. Oscillations and waves. Oscillatory movement. Wave motion.
- **Topic 5**. Electricity and Magnetism.
- **Topic 6**. Optics.
- **Topic 7**. Fluids. Fluids statics. Ideal fluids dynamics. Real fluids. Surface phenomena.
- **Topic 8**. Thermodynamics. Ideal gases. Kinetic theory of gases. First and second laws of thermodynamics. Thermodynamics process. Thermal properties of matter.
- **Topic 9**. Electrical and magnetic properties of matter.
- **Topic 10**. Mechanics. Newton laws. Cinematics. Energy.
- **Topic 11.** Gravitation. Planetary movement.

Laboratory sessions

- **Session 1**. Forced oscillations. Mechanical resonances.
- **Session 2**. Standing waves.
- **Session 3**. Resistivity measurement.
- **Session 4**. Optical Components. Microscope. Measurement of basic properties of light.
- **Session 5**. Measuring of mechanical properties of fluids.
- **Session 6**. Fluid Mechanics.
- **Session 7**. Measurement of thermal properties of matter.
- **Session 8**. Measurement of electrical and magnetic properties of matter.

4.4.Course planning and calendar

- The problem-solving classes will be held on Tuesdays during the first term and Wednesdays during the second term. Two reduced groups of problems will be organized: group I, 12-13h; group II 13-14h.
- The practice sessions will be held on Tuesday, Wednesday and Friday (in the second term). Specific dates will be announced by teachers in advance.

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the Faculty of Sciences and Earth Sciences Department websites (https://ciencias.unizar.es; https://cienciastierra.unizar.es) and Moodle.

4.5.Bibliography and recommended resources

http://biblos.unizar.es/br/br_citas.php?codigo=26403&year=2019