26923 - Optics

Información del Plan Docente

Academic Year	2016/17
Academic center	100 - Facultad de Ciencias
Degree	447 - Degree in Physics
ECTS	8.0
Course	3
Period	First semester
Subject Type	Compulsory
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

Given the overall objectives of the course, the learning process is based on the acquisition of theoretical knowledge, problem solving and conducting experimental work

5.2.Learning activities

Training activity 1: Acquisition of basic knowledge of optics (5.5 ECTS). The methodology is mainly based on participative lectures addressed to the whole group of students. It is complemented with tutorial care (individualized or in small groups).

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Training activity 2: Problem solving related to the content of the subject (1.5 ECTS). The methodology is based on classes with the widest possible interaction between teacher and students, promoted from the proposal and common discussion of practical cases of application of the concepts covered in the previous activity.

Training activity 3: Observation, analysis and experimental measurement of optical phenomena (1 ECTS). The methodology is based on conducting experimental demonstrations by the teacher and laboratory practices carried out by students and leading to a report of findings.

5.3.Program

1. Basic properties: wave optics and geometrical optics, diffraction phenomena, coherence and interferences.

2. Basic light-matter interaction phenomena. Light sources.

3. Light detectors.

4. Radiometry, photometry and colorimetry.

5. Anisotropic media. Electro-optical and magneto-optical effects.

6. Polarization and related devices.

7. Optical imaging.

8. Optical instruments.

9. Optical metrology: diffraction gratings, interferometers.

5.4.Planning and scheduling

The explanation of the theory and problem solving are carried out following the nine thematic blocks listed above. The experimental work consists of sessions of experimental demonstrations and laboratory practices. Theory classes and problems are imparted in classrooms and schedules established by the academic authorities. The schedule of experimental demonstrations and laboratory practices is made at the beginning of the course, according to the number of students enrolled and the availability of laboratories.

5.5.Bibliography and recomended resources