

## 39123 - Optics

### Syllabus Information

**Academic Year:** 2021/22

**Subject:** 39123 - Óptica

**Faculty / School:** 100 - Facultad de Ciencias

**Degree:** 577 - Joint Program in Physics and Mathematics

**ECTS:** 8.0

**Year:** 3

**Semester:** First semester

**Subject Type:** Compulsory

**Module:**

### 1. General information

### 2. Learning goals

### 3. Assessment (1st and 2nd call)

### 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, practice sessions and laboratory sessions.

#### 4.2. Learning tasks

This is an 8 ECTS course organized as follows:

- **Lectures** (5.5 ECTS). They allow students to acquire a basic knowledge on optics. The methodology is mainly based on participative lectures. It is combined with individual or small-group tutorials.
- **Practice sessions** (1.5 ECTS). Problem-solving tasks related to the course contents. The methodology is based on classes with the highest possible interaction between teacher and students, promoted from the proposal and common discussion of practical cases of application of the concepts covered in lectures.
- **Laboratory sessions**. (1 ECTS). They consist on observation, analysis and experimental measurement of optical phenomena. The methodology is based on the conduction of experimental demonstrations by the teacher and the laboratory work carried out by students leading to a report of findings.

#### 4.3. Syllabus

The course will address the following topics:

- Topic 1. Basic properties: wave optics and geometrical optics, diffraction phenomena, coherence and interferences.
- Topic 2. Basic light-matter interaction phenomena. Light sources.
- Topic 3. Light detectors.
- Topic 4. Radiometry, photometry and colorimetry.
- Topic 5. Anisotropic media. Electro-optical and magneto-optical effects.

- Topic 6. Polarization and related devices.
- Topic 7. Optical imaging.
- Topic 8. Optical instruments.
- Topic 9. Optical metrology: diffraction gratings, interferometers.

#### **4.4. Course planning and calendar**

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 website

#### **4.5. Bibliography and recommended resources**

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=39123>