

Academic Year/course: 2021/22

## 60984 - Photonics and optical engineering

### Syllabus Information

**Academic Year:** 2021/22

**Subject:** 60984 - Photonics and optical engineering

**Faculty / School:** 110 - Escuela de Ingeniería y Arquitectura

**Degree:** 623 - Master's Degree in Telecommunications Engineering

**ECTS:** 6.0

**Year:** 2

**Semester:** First semester

**Subject Type:** Optional

**Module:**

## 1. General information

### 1.3. Recommendations to take this course

## 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 achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as

M1 Lectures (36 hours).

M9 Laboratory sessions (16 hours). Laboratory assignments and visits to different photonics research and development facilities.

M6 Group assignment (60 hours).

M10 Tutorials.

M11 Assessment. Combination of a final test, laboratory work, and the mark of the group assignment.

### 4.2. Learning tasks

The course includes the following learning tasks:

Lectures (36 hours). Presentation of the main course contents combined with active participation of students.

Laboratory sessions (16 hours). 3 sessions of 3 hours each (9 hours total) and visits to research and development facilities (7 hours total).

Group assignments. In groups and under the supervision of the teacher, students will be assigned a case study related to photonics or optical engineering.

### 4.3. Syllabus

The course will address the following topics:

Topic 1. Introduction to photonics and optical engineering. Fields of application

Topic 2. Optoelectronics. Synchronous detection in optical instrumentation

Topic 3. Geometric Optics and optical system design.

Topic 4. Integrated optics and optical sensors

Topic 5. Advanced applications of optical fibers

Topic 6. Interferential optics

Topic 7. Optical engineering for industry

#### **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 EINA website.

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

The students will have access to the lecture notes prepared by the teachers, which will cover all the contents of this course.