

26809 - Optical Physics

Syllabus Information

Academic Year: 2020/21

Subject: 26809 - Optical Physics

Faculty / School: 100 - Facultad de Ciencias

Degree: 297 - Degree in Optics and Optometry

ECTS: 6.0

Year: 2

Semester: First semester

Subject Type: Compulsory

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 objective, which is mainly the understanding of light waves propagation and the phenomena associated (interferences, diffraction, polarization...)

Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes and the course syllabus, as well as other course-specific learning materials.

Further information regarding the course will be provided on the first day of class.

4.2.Learning tasks

Learning task 1: Modelling light as an electromagnetic wave and the study of the phenomena associated with its propagation (Lectures and large group practical sessions)

Learning task 2: Development of experimental setups and measurements in the laboratory (small group practical sessions)

4.3.Syllabus

Theoretical program:

- 1.- Introduction. Nature of light.
- 2.- Waves; basic concepts.
- 3.- Electromagnetic waves; fundamentals.
- 4.- Interferences.
- 5.- Diffraction.
- 6.- Polarization.
- 7.- Reflection and refraction of plane waves.
- 8.- Light-matter interaction. Dispersion.

Practice lessons in the laboratory:

- Fourier transform
- Interferences
- Diffraction
- Diffraction gratings
- Polarization

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 <https://ciencias.unizar.es/> and moodle website.

4.5.Bibliography and recommended resources

- BB** Cabrera, José Manuel. Óptica electromagnética. Vol. I, Fundamentos / José Manuel Cabrera, Fernando Jesús López López . 2ª ed. Madrid [etc.] : Addison Wesley : Universidad Autónoma de Madrid, cop. 1998
- BB** Cabrera, José Manuel. Óptica electromagnética. Vol. II, Materiales y aplicaciones / José Manuel Cabrera, Fernando Fernando Jesús López . Madrid [etc.] : Addison Wesley : Universidad Autónoma de Madrid, D.L. 2000
- BB** Casas Pelaez, Justiniano. Optica / Justiniano Casas . - 7a. ed. Zaragoza : [El Autor], 1994
- BB** Hecht, Eugene. Optica / Eugene Hecht ; traducción Raffaello Dal Col, revisión técnica Rosa Weingard Talavera, Jos Pérez . - 3a ed. en español Madrid [etc] : Addison-Wesley, D.L. 1999
- BC** Pedrotti, Frank L.. Introduction to optics / Frank L. Pedrotti, Leno S. Pedrotti, Leno M. Pedrotti . - 3rd ed. Upper Sadr Pearson Prentice Hall, cop. 2007
- BC** Pedrotti, Leno S.. Optics and vision / Leno S. Pedrotti, Frank L. Pedrotti, S. J. Upper Saddle River : Prentice-Hall, co