

26820 - Optical Technology III

Syllabus Information

Academic Year: 2022/23

Subject: 26820 - Optical Technology III

Faculty / School: 100 - Facultad de Ciencias

Degree: 297 - Degree in Optics and Optometry

ECTS: 6.0

Year: 4

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

Theoretical sessions consist mainly in participatory lectures, both theoretical and practical problems or cases in which student participation is encouraged.

The practical sessions with real cases, consist of carrying out roles of a process of evaluation, prescription, ordering, assembly and follow-up of at least two cases with real patient.

The computer practice sessions will consist of individual practical simulation with ray tracing programs.

Continuous learning will be stimulated by tasks proposed sessions both theory and practice, the students will hand through the moodle platform.

4.2. Learning tasks

1. Prescription, mounting and monitoring of a refractive compensation (1 ECTS)

Methodology: individual practices with rotating allocation of roles.

2. Learning real ray tracing software in eye lens systems. (2.5 ECTS)

Methodology: 1. Individual guided practices. 2. Exercises.

3. Knowledge acquisition for characterization, design and prescription of ophthalmic lenses in glasses. (1.5 ECTS)

Methodology: large group lectures.

4. Contacting with ophthalmic industry professionals (0.5 ECTS)

Methodology: Seminars and visits to the ophthalmic industry factories.

5. Knowledge acquisition on ophthalmic lenses market (0.5 ECTS).

Methodology: 1 Lectures 2. Exercises by ADD 3. Development of group work, defense and debate.

4.3. Syllabus

Theoretical contents:

- 1: Review of paraxial approximation, surfaces and aberrations.
- 2: Design of lenses with spherical surfaces
- 3: Design of lenses with aspheric surfaces
- 4: Design of astigmatic lenses
- 5: Design of progressive lenses
- 6: Free-form
- 7: Commercial ophthalmic lenses
- 8: Commercial progressive lenses

PRACTICES:

Raytracing (OSLO):

- Program OSLO raytracing to design of ophthalmic lenses
- Analysis of image quality (spot diagram, Zernike coefficients, chromatic aberration)
- Analysis of the performance of ophthalmic lenses decentered and tilted
- Analysis of the performance of ophthalmic lens at oblique gaze

Practices with patients:

- Patients subjective refraction
- Election of ophthalmic compensation and mounting conditions
- Lenses order
- Assembly Compensation
- Compensation testing

4.4. Course planning and calendar

Schedule sessions and presentation of works

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

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=26820>