Universidad Zaragoza

Academic Year/course: 2023/24

26830 - Graphic Tools and Optical Design

Syllabus Information

Academic year: 2023/24
Subject: 26830 - Graphic Tools and Optical Design
Faculty / School: 100 - Facultad de Ciencias
Degree: 297 - Degree in Optics and Optometry
ECTS: 6.0
Year:
Semester: Second semester
Subject type: Optional
Module:

1. General information

The subject has a clear orientation towards optical design, and includes the learning of:

- Graphic tools applicable to the design of optical components, the use of geometric modeling programs for components, the definition of optical assemblies and simulation of their final finish.
- Graphic tools applicable to the professional practice of an optician-optometrist, the modeling by means of avatars of the morphological parameters of human faces as well as those that allow simulating the adaptation of spectacle frames to the specific characteristics of end users in an optician's shop.
- Complementary graphic tools for the elaboration of mock-ups and obtaining virtual 3D prototypes by means of 3D printing and generation of three-dimensional models with 3D scanners, graphic design and similar tools.

These approaches and objectives are aligned with some of the Sustainable Development Goals, SDGs, of Agenda 2030
Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation. Objective 9.4.
Goal 12: Ensure sustainable consumption and production patterns. Objective 12.5.

2. Learning results

The subject and its expected results respond to the following approaches and objectives:

- Ability to model optical equipment components and prototyping.
- Ability to interpret graphic technical documents
- Ability to communicate orally and in writing
- Ability to attend to optical users
- Ability to analyze and synthesize
- Ability to work both independently and as part of a team
- Ability to generate new ideas

After passing the subject, the student will have the:

- Ability to represent plans, following the technical rules of drawing and using graphic tools, of frames, lenses and devices of optometric optics.
- Ability to model frames, lenses and devices of optometric optics in 3D using computer aided design graphic tools.
- Ability to generate eyeglass prototypes for better design evaluation.
- Ability to handle the shapes used in the design of frames and to interact with the facial features of customers/patients.

The student, in order to pass this subject, must demonstrate the following results:

- Describe and identify the different types of frames and lenses.
- Recognize the different facial typologies.
- Will be able to recommend which frames are best for each person according to their facial features.
- Know and understand the basics of Technical Drawing in order to apply them to the interpretation of plans of frames, lenses and optical devices.
- Skillfully use graphic tools to design frames, lenses and optical devices.

3. Syllabus

The program of the subject includes the following topics:

- The design process
- Product modeling typologies
- Solid modeling
- Surface modeling
- Evolution of frame design
- Typology of frames
- Functional measurements of frames
- Facial measurements
- Face typology
- Adaptation of the frame to the user
- Prototyping of virtual 3D models

4. Academic activities

The program offered to the student to help them achieve the expected results includes the following activities;

- Theoretical-practical syllabus (30 hours)
- Practical sessions (30 hours)

The teaching and evaluation activities will be carried out in person unless, due to the health situation, the provisions issued by the competent authorities and the University of Zaragoza make it necessary to carry them out telematically or semi-telematically with rotating reduced capacity.

5. Assessment system

The student must demonstrate that they has achieved the expected learning results through the following evaluation activities.

The evaluation system may be through continuous evaluation or final evaluation.
The continuous evaluation will consist of the following tests:

- A theoretical-practical exam (20% final grade).
- Subject work to be defined at the beginning of the term (80% final grade).

The final evaluation will consist of two tests: a first test, with theoretical-practical questions and problems related to the subject taught (20% final grade), and a second practical test using computer-aided design graphic tools (80% final grade). The duration of the test will be 3 hours.