COURSE DATA

DATA SUBJECT

Code: 34308
Name: Ophthalmic lens assembly and adaptation
Cycle: Undergraduate Studies
ECTS Credits: 9
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1207 - Degree in Optics and Optometry	Facultat de Física	3	Annual

SUBJECT-MATTER

Degree	Subject-matter	Character
1207 - Degree in Optics and Optometry	Ophthalmic optics	COMPULSORY

COORDINATION

BENLLOCH FORNES JOSEFA ISABEL

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SUMMARY

The main objective of this course is to provide basic knowledge of the parameters involved in the correct fitting of an optical prescription. To this end, it is necessary to understand the relationship between the characteristics of the patient, the frame and the ophthalmic lenses.

The second objective is to apply this knowledge in the practical sessions, in which students learn how to carry out the mounting and fitting of different optical prescriptions, from the simplest to the most complex.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

It is recommended that students have previously taken the second-year course Ophthalmic Optics.

COMPETENCES / LEARNING OUTCOMES

1207 - Degree in Optics and Optometry

Being able to handle the techniques of centering, adaptation, assembly and manipulation of all types of lenses, an optometric prescription, visual aid and protective glasses.

To identify and to analyze environmental and occupational risk factors that can cause visual problems.

To know and to calculate the most relevant geometric, optical and physical parameters that characterize all types of ophthalmic lenses used in optometric prescriptions and to know how to relate them to the properties involved in the adaptation process.

To know and to handle the techniques for the analysis, measurement, correction and control of the effects of compensating optical systems on the visual system, in order to optimize their design and adaptation.

To know the physical and chemical properties of the materials used in optics and optometry.

To know the principles, description and characteristics of the fundamental optical instruments, as well as the instruments used in optometric and ophthalmological practice.

To know the processes of selection, manufacture and design of lenses.

DESCRIPTION OF CONTENTS

1. Theoretical-practical block

• Protocol for fitting ophthalmic lenses and frames according to the prescription.
• Relevant factors in measurement taking according to the type of prescription.
• Prismatic prescriptions. Applications.
• User tolerances in clinical practice.
• Analysis and resolution of problems related to non-adaptation to prescriptions.

2. Mounting and fitting of ophthalmic lenses I

Session 1. Recognition of the different types of lenses and their characteristics. Marking and centration of lenses. Lens catalogues. Selection of the most appropriate lens for each case.

Session 2. Design and parameters of frames. Criteria for selecting a frame. Alignment and adjustment of frames. Measurement of pupillary distances using talc and a ruler. Measurement of frame parameters

using the Boxing system. Calculation of lens decentrations. Minimum lens diameter and precalibration.

Session 3. Use of software applications for ordering and remote edging of ophthalmic lenses.

Session 4. Manual mounting of spherical lenses in acetate and/or metal frames. Adjustment and fitting.

Session 5. Template-based mounting of organic and mineral sphero-cylindrical lenses in acetate and/or metal frames, using semi-automatic edgers.

Session 6. Mounting of organic and polycarbonate sphero-cylindrical lenses in acetate and/or metal frames, using automatic edger I, with a tracer.

Session 7. Mounting of organic and polycarbonate sphero-cylindrical lenses in acetate and/or metal frames, using automatic edger II, with touch technology.

Session 8. Fitting of organic and mineral sphero-cylindrical lenses in acetate and/or metal frames, using automatic edgers I and II.

3. Mounting and fitting of ophthalmic lenses II

Sessions 9 and 10. Mounting of a bifocal lens using semi-automatic and/or automatic edgers.

Sessions 11 and 12. Mounting of a progressive lens using semi-automatic and/or automatic edgers.

Session 13. Fitting of a progressive lens using automatic edgers.

Session 14. Mounting of grooved and/or drilled spectacles. Other types of mounting.

Session 15. Timed practical simulation.

Session 16. Practical assessment of mounting.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Seminar	5,00
Laboratory	85,00
Total hours	**90,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	5,00
Individual or group project	15,00
Independent study and work	10,00
Preparation of lessons	25,00
Preparation for assessment activities	50,00
Resolution of case studies	30,00
Total hours	**135,00**

TEACHING METHODOLOGY

• Lectures delivered by the teaching staff.
• Participatory classes, presentation of assignments and seminars based on real cases.
• Laboratory practical sessions, with a brief theoretical explanation and practical activities with a progressive level of difficulty.
• Use of office software tools.
• Use of specific material and equipment for carrying out laboratory practical sessions.

EVALUATION

The final mark for the course will be the sum of two parts: Part A + Part B.

Part A. Continuous assessment: 70% of the final mark, 7 points

• Seminars: 30% of the final mark, 3 points. Attendance, participation and correct resolution of the proposed theoretical-practical exercises will be assessed.

• Laboratory practical sessions: 40% of the final mark, 4 points. The completion of the practical sessions and the submission of the report or documentation corresponding to the practical exercises will be assessed.

• Minimum requirement: to pass Part A in the first examination period, students must obtain at least 50% of its maximum score, that is, 3.5 points out of 7. If this minimum is achieved, the mark obtained in Part A will be retained for the second examination period.

Part B. Practical laboratory examination: 30% of the final mark, 3 points

• The examination may include short-answer questions, multiple-choice questions and the mounting of monofocal, bifocal and/or progressive lenses.

• Accuracy in axis marking, spherical power and cylindrical power, as well as correct execution of the mounting, will be assessed. Errors greater than 5º in axis marking and/or in the mounting of the axis in any of the sphero-cylindrical lenses will result in failing the practical examination. Likewise, errors greater than ±0.50 D in the spherical and/or cylindrical power of the sphero-cylindrical lenses will result in failing the

practical examination.

• Minimum requirement: to pass Part B in each examination period, students must obtain at least 50% of its maximum score, that is, 1.5 points out of 3.

First examination period

• To pass the course in the first examination period, students must simultaneously meet the minimum requirements for Part A and Part B, and obtain a final mark equal to or higher than 5 points out of 10.

• If students do not pass Part A, they must recover it in the second examination period through a practical laboratory examination, which in this case will account for 100% of the final mark.

• If students pass Part A but do not pass Part B, they will retain the mark obtained in Part A and will only have to recover Part B in the second examination period.

• If students do not pass either Part A or Part B, they must take a practical laboratory examination in the second examination period, which will account for 100% of the final mark.

Second examination period

• Part A may be recovered in the second examination period through a practical laboratory examination accounting for 100% of the final mark, in those cases in which continuous assessment from the first examination period has not been passed or retained.

• Students who passed Part A in the first examination period will retain that mark and will only have to recover Part B, maintaining the weighting of 70% for Part A and 30% for Part B.

• To pass the course in the second examination period, students must meet the applicable minimum requirements in each case and obtain a final mark equal to or higher than 5 points out of 10.

REFERENCES

Basic bibliography:

- Salvado, J. et al. Tecnología óptica: lentes oftálmicas, diseño y adaptación. Barcelona: Edicions UPC, 2001. ISBN: 8483014742.
- Benito Galindo, A.; Villegas Ruiz, E.A. Montaje y aplicaciones de lentes oftálmicas. University of Murcia, 2001.

Supplementary bibliography:

- Brooks, C.; Borish, I. System for Ophthalmic Dispensing. Elsevier, 2006.
- Alonso, J.; Gómez-Pedrero, J.A.; Quiroga, J.A. Modern Ophthalmic Optics. Cambridge University Press, 2019.