COURSE DATA

Data Subject	
Code	34308
Name	Ophthalmic lens assembly and adaptation
Cycle	Grade
ECTS Credits	9.0
Academic year	2022 - 2023

Study (s)

Degree	Center	Acad. year	Period
1207 - Degree in Optics and Optometry	Faculty of Physics	3	Annual

Subject-matter

Degree	Subject-matter	Character
1207 - Degree in Optics and Optometry	14 - Ophthalmic optics	Obligatory

Coordination

Name	Department
BENLLOCH FORNES, JOSEFA ISABEL	280 - Optics and Optometry and Vision Sciences
OLMOS CARRILLO, FRANCISCO JULIAN	280 - Optics and Optometry and Vision Sciences

SUMMARY

The primary objective of this course is to provide basic knowledge of the parameters involved in an appropriate adaptation of an optical prescription.

The second objective is the implementation of this knowledge through practice sessions.

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 to have taken the course "Ophthalmic optics" in the 2nd year of degree.

COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

1207 - Degree 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 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 the physical and chemical properties of the materials used in optics and optometry.
- To know the processes of selection, manufacture and design of lenses.
- 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 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 identify and to analyze environmental and occupational risk factors that can cause visual problems.

LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

Through theoretical contents the student will be able to acquire knowledge of frames, ophthalmic lenses and user parameters, as well as, the relationship between them so that there is good use of optical prescription. In addition, they will be able to contact with the marketing of products, distribution, storage and provide information to the user.

Through laboratory practices they will experience the practical creation of glasses with their correct centering and fitting of the ophthalmic lenses in a frame of an optical prescription adjusted to the desired parameters of the user, as well as the varied work to be done in an optic workshop.

DESCRIPTION OF CONTENTS

1. Theoretical and practical block

- Steps to follow in the adaptation of lenses and ophthalmic frames.
- According the prescription, relevant factors in the measurement.
- Prescribing prisms. Applications.
- Tolerance limits in clinical practice.
- Analysis and solution for the adaptation of prescription.

2. Fitting ophthalmic lenses I

Session 1. Recognition of different types of lenses. Marking and focusing lenses. Ophthalmic lenses catalog. Choice lens-case
Session 2. Design and parameters of the frames. How do I choose spectacle frames?. Alignement and adjustment of frames. Pupillary measurements. Boxing measurements of spectacle frame. How to calculate the decentration distance of ophthalmic lenses. Effective diameter. Precalibration method.
Session 3. Management of software for the request of ophthalmic lenses.
Session 4. Fitting spherical organic and mineral lenses on acetate and metal frames. Frame outline manually. Replacing eyeglass lenses in full-rim frames and other types of frames.
Session 5. Fitting sphero-cylindrical organic and mineral lenses on acetate and/or metal frames with semi automatic frame eyewear edging machine. Frame outline manually.
Session 6. Fitting sphero-cylindrical organic and polycarbonate lenses on acetate and/or metal frames with automatic machine I, tracer incorporated.
Session 7. Fitting sphero-cylindrical organic and polycarbonate lenses on acetate and/or metal frames with automatic machine II, patternless automatic lens edger.
Session 8. Fitting bifocal lenses with semi automatic and/or automatic machines.
Session 9. Fitting progressive lenses with semi automatic and/or automatic machines.
Session 10. Reviewing and delivery of activities.

3. Fitting ophthalmic lenses II

Session 11. Fitting lenses grooved and/or drilled.
Session 12. Another type of mounts and assemblies.
Session 13. Delivery of practice activities.
Session 14. Practical exercise.
Session 15. Reviewing of previous practices.
Session 16. Exercise of the subject (I).

WORKLOAD

ACTIVITY	Hours	% To be attended
Laboratory practices	70,00	100
Theory classes	15,00	100
Tutorials	5,00	100
Attendance at events and external activities	5,00	0
Development of individual work	15,00	0
Study and independent work	10,00	0
Preparation of evaluation activities	50,00	0
Preparation of practical classes and problem	25,00	0
Resolution of case studies	30,00	0
TOTAL	**225,00**	

TEACHING METHODOLOGY

CLASSROOM THEORY WILL BE SUPPORTED BY BOARD CLASSES, SLIDES AND PROJECTIONS ...
And the LABORATORY CLASSES consistS of a short introduction relización theory and the work itself (WITH PROGRESSIVE DIFFICULTY) LABORATORY AND Specific tooling.

EVALUATION

The total score will be the result of:

-Seminars: assistance, performance and adequate delivery of related theoretical-practice (continuous assessment), 1,5 point (15%). Not recoverable in the second call of the academic year.

-Laboratory practices (continuous assessment): performance and adequate delivery of related practices 1,5 points (15%). Not recoverable in the second call of the academic year.

-Laboratory exam 7,0 points (70%) in the first and second official exam. There will be short questions and / or test type, in addition to assembling in a frame a pair of ophthalmic lenses (monofocal, bifocal and / or progressive lenses, with slot or hole variants, or a combination of any of the options mentioned above).

Superior errors in marking the sphero-cylindrical lenses axis, when one of them is over than 5º, the optic exam fails the test. Superior measurements errors to +/- 0,50 D in the power spherical (as well as cylindrical) indicated in the sphero-cylindrical lenses, the optic exam fails the test.

The laboratory exam will be carried out at the end of the subject.

Students must pass the laboratory exam, at least, the 50% to the average in each official call.

The information of the works and activities will be detailed in class or through the virtual classroom.

REFERENCES

Basic

- Salvado, J. [et al.]. Tecnología óptica: lentes oftálmicas, diseño y adaptación. Barcelona: Edicions UPC, 2001 ISBN 8483014742.
- Benito Galindo, A y Villegas Ruiz, EA. Montaje y aplicaciones de lentes oftálmicas. Universidad de Murcia 2001