

**COURSE DATA****DATA SUBJECT****Code:** 47003**Name:** Advances in Low Vision**Cycle:** Master's Degree**ECTS Credits:** 3**Academic year:** 2025-26**STUDY (S)**

Degree	Center	Acad. year	Period
2280 - Master's Degree in Advanced Optometry and Vision Sciences	Facultat de Física	1	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
2280 - Master's Degree in Advanced Optometry and Vision Sciences	Avances en baja visión	COMPULSORY

COORDINATION

ALBARRAN DIEGO CESAR ANTONIO

SUMMARY

This course addresses current low vision rehabilitation techniques through an integral, patient-centered approach. It covers prescription of optical aids (magnifiers, selective filters, telescopic systems, and prisms to compensate for central or peripheral visual field loss), non-optical aids (improved lighting, contrast enhancement, and spatial orientation), and advanced electronic devices (electronic magnification systems, augmented reality, and intelligent visual aids).

The use of typhlotechnology is also introduced as a key rehabilitation tool, especially for accessible operation of electronic devices (computers, smartphones, voice assistants), facilitating communication, reading, and personal autonomy.

Strategies for environmental adaptation to improve functional independence in daily activities are analyzed, along with functional vision assessment protocols and clinical criteria for personalized aid and resource selection based on the type and degree of visual impairment.

Rehabilitation begins not only with optical aid prescription but also with activities aimed at



functional use of residual vision, individually tailored to the patient's abilities, goals, and environment.

The practical methodological approach is based on analysis and resolution of real clinical cases. Students apply learned techniques, design individualized visual rehabilitation plans, and evaluate their effectiveness with functional tests and validated quality-of-life questionnaires.

Finally, critical reflection on social integration and emotional well-being of people with low vision is encouraged, highlighting the optician-optometrist's key role in their rehabilitation process and quality-of-life improvement.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

Students are recommended to have a strong foundation in ocular anatomy and physiology, with special emphasis on the retina and visual pathways. It is also essential to understand the principles of visual optics and refraction, as these underpin the calculation and fitting of optical aids for low vision patients.

Prior experience is required in functional assessment techniques, including:

- Visual acuity (distance and near)
- Perimetry
- Contrast sensitivity
- Optical coherence tomography (OCT) for structural evaluation of the macula and optic nerve

Familiarity with basic visual psychophysics concepts is highly valued, as it is crucial for accurate interpretation of clinical results. Experience with magnifiers and basic magnification systems, both handheld and spectacle-mounted, will also be beneficial.



Additionally, prior experience in assessing low vision patients, whether in clinical settings, supervised practicums, or applied research projects, will be considered particularly valuable.

COMPETENCES / LEARNING OUTCOMES

2280 - Master's Degree in Advanced Optometry and Vision Sciences

Communicate and inform the patient about all procedures and tests to be performed and clearly explain the results and diagnosis.

Conduct a clinical history appropriate to the patient's profile.

Identify characteristic symptoms indicating the need for action in different areas for patients with low vision.

Improve functional outcomes through the adaptation and application of low vision techniques and equipment.

Obtain the appropriate optical prescription or aid for each type of patient depending on their needs and visual function status.

Plan visual rehabilitation for low vision.

Understand ocular and neural retinal alterations that may imply reduced visual function.

Understand optical and non-optical aids for low vision.

Understand the latest research in the field of low vision.

DESCRIPTION OF CONTENTS

Topic 1. Low Vision Patient Selection

This topic covers the clinical and functional criteria for selecting low vision patients eligible for visual rehabilitation programs. It examines the patient's visual, psychological, and social profile, as well as prognostic factors influencing adherence, treatment response, and functional improvement potential. The goal is for students to acquire the competencies needed to rigorously and ethically identify which patients can benefit from a rehabilitation plan, perform a visual assessment applying optical and optometric correction principles, and plan an integrated approach tailored to the patient's real needs.

Topic 2. Low Vision Rehabilitation Program

This topic addresses the design, implementation, and follow-up of personalized visual rehabilitation programs for low vision patients. Based on a comprehensive optometric evaluation and functional needs assessment, therapeutic objectives are set and the most appropriate



rehabilitation strategies are chosen, combining optical, non-optical, electronic aids and visual training techniques. It delves into aid selection criteria based on the patient's visual and functional profile, as well as training and adaptation protocols to maximize autonomy and comfort. The optician-optometrist's role as coordinator of the rehabilitation process is emphasized, integrating clinical care with person-centered attention to promote autonomy, social inclusion, and psychological well-being.

Topic 3. Residual Vision Training

This topic deals with strategies and techniques aimed at the functional use of residual vision in people with low vision, as a key part of the rehabilitation process. It begins with analyzing residual visual capabilities (visual acuity, visual field, contrast sensitivity, color vision, microperimetry, Amsler grid) to design individualized visual training programs aimed at maximizing daily living skills. The objective is for students to design, apply, and adjust a personalized visual training plan that enhances patient autonomy, integrating the clinical, optometric, and psychophysical knowledge needed to evaluate progress and effectiveness within the rehabilitation process.

Topic 4. Orientation and Mobility Techniques

This topic focuses on orientation and mobility techniques applied to people with low vision as an essential part of rehabilitation. It examines the fundamental principles of safe, autonomous mobility, including effective navigation in known and unknown environments and spatial orientation using visual, auditory, and tactile cues. The goal is for students to acquire the competencies needed to integrate orientation and mobility techniques into a personalized visual rehabilitation plan, assessing their impact on quality of life, social inclusion, and functional safety.

Topic 5. Typhlotechnology and New Technologies in Low Vision

This topic explores the latest technological innovations in the rehabilitation of visually impaired and low vision patients, focusing on the use of typhlotechnology and advanced electronic devices. It reviews key aids based on augmented reality (AR), virtual reality (VR), and artificial intelligence, as well as their clinical applications in visual training and functional autonomy enhancement. It also introduces technological accessibility principles (typhlotechnology) and criteria for individualized selection and adaptation of electronic aids. Reflection is encouraged on the optician-optometrist's advisory and training role in new technologies and their impact on quality of life and social inclusion.

Topic 6. Practical Application Through Clinical Cases

This topic includes three supervised clinical sessions at the UV Optometric Clinic where students work with real low vision patients affected by conditions such as age-related macular degeneration (AMD), retinitis pigmentosa, and advanced glaucoma. During these sessions, students apply the visual rehabilitation techniques learned in class, including optical, non-optical, and electronic aids, design personalized support plans tailored to each patient's functional needs, and evaluate aid effectiveness using specific functional tests and standardized quality-of-life questionnaires, all under direct faculty supervision.

**WORKLOAD****PRESENCIAL ACTIVITIES**

Activity	Hours
Theory	10,00
Seminar	5,00
Laboratory	15,00
Total hours	30,00

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	10,00
Independent study and work	10,00
Preparation of lessons	0,00
Preparation for assessment activities	5,00
Resolution of case studies	20,00
Total hours	45,00

TEACHING METHODOLOGY

The course combines lectures, participatory seminars, and clinical practical sessions with real patients to promote both theoretical knowledge acquisition and the development of clinical competencies alongside active student engagement.

An expository (lecture-style) method is used, supported by audiovisual materials (clinical images, explanatory videos, and micro-learning modules), facilitating understanding of key concepts in low vision and visual rehabilitation. This theoretical training is complemented by:

Seminars

Students work in groups to prepare and present projects based on the theoretical content. Collaborative work, critical thinking, and analysis of simulated clinical scenarios are encouraged, fostering active learning and solid knowledge retention.

Practical Sessions

Practical training takes place in three sessions at the UV Optometric Clinic, where students participate in direct care of low vision patients referred to the Unit. These sessions are supervised by specialized faculty, ensuring guided and safe learning.

During these sessions, students:



- Apply functional vision assessment techniques
- Prescribe and adjust optical and non-optical aids
- Design a personalized rehabilitation plan with individualized follow-up
- Evaluate intervention effectiveness
- Incorporate typhlotechnology to facilitate access to electronic devices and enhance patient autonomy

This methodology enables students to integrate theoretical knowledge, clinical skills, and communication competencies, developing a critical and applied understanding of the optometric approach to low vision.

EVALUATION

In the first examination period, the final grade will be calculated as the weighted sum of three components:

- Final exam: 70%
- Continuous assessment: 15%
- Practical component: 15%

A minimum score of 5 out of 10 in each of the three components is required to pass the course.

In the second examination period, the same weightings and minimum requirements apply (70% exam, 15% continuous assessment, 15% practical).

Students will only need to retake the components they failed to pass (i.e., those in which they did not achieve the minimum 5 out of 10), under the same criteria as in the first examination period.

REFERENCES



Basic references:

- Coco Martín M.B., Herrera Medina J., de Lázaro Yagüe J.A., Cuadrado Asensio R. *Manual de baja visión y rehabilitación visual*. Editorial Médica Panamericana; 2015. ISBN 978-84-9835-849-0.
- Correa G. *Manual de rehabilitación para personas con discapacidad visual de América Latina*. 2023. ISBN 978-9915-9627-0-2.
- Organización Nacional de Ciegos Españoles (ONCE). *Mucho que ver: Así es el día a día de las personas ciegas*. Serie documental en 11 capítulos. Disponible en: <https://www.once.es/servicios-sociales/autonomia-personal/mucho-que-ver>

Complementary references:

- Asociación Acción Visión España (AVE). *Manual de trato a personas con baja visión*. 2019.
- Brown B. *The low vision handbook for eyecare professionals*. CRC Press; 2024. ISBN 978-1556427954.
- Whittaker S., Scheiman M., Sokol-McKay D. *Low vision rehabilitation: A practical guide for occupational therapists*. Taylor & Francis; 2024. ISBN 978-1617116339.