COURSE DATA

DATA SUBJECT

Code: 47006
Name: Clinical diagnostic techniques
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	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
2280 - Master's Degree in Advanced Optometry and Vision Sciences	Materias Optativas	ELECTIVES

COORDINATION

LUQUE COBIJA M JOSEFA

SUMMARY

This course provides the knowledge and skills required for the use and interpretation of the main clinical examination instruments in optometry. Various anterior and intermediate segment analyzers are reviewed, including Scheimpflug technology, OCT, and next-generation slit lamps. Assessment criteria for ocular imaging are covered, with special emphasis on digital fundus photography. The course explores in depth the examination techniques of the retinal nerve fiber layer using OCT and its thickness analysis. Finally, practical examples of the applications of current equipment are presented, integrating standardized protocols for data acquisition and analysis under clinical supervision.

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 a solid command of the undergraduate-level content related to optometry, contact lens fitting, ocular anatomy, ocular physiology, and clinical examination methods.

COMPETENCES / LEARNING OUTCOMES

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Act autonomously in learning, make informed decisions in different contexts, issue judgements based on experimentation and analysis and transfer knowledge to new situations.

Analyse results obtained from clinical examination devices in the anterior, middle and posterior ocular segments.

Apply various ocular examination techniques from a clinical perspective.

Be able to communicate effectively, both orally and in writing, adapting to the characteristics of the situation and audience.

Collaborate effectively in work teams, taking on responsibilities and leadership roles and contributing to collective improvement and development.

Contribute to the design, development and implementation of solutions that respond to social demands, considering the Sustainable Development Goals as a reference.

Demonstrate critical and self-critical reasoning in the field of the degree, considering aspects such as professional ethics, moral value and the social implications of the different activities carried out.

Develop skills in handling and evaluating recently developed instruments and techniques.

Incorporate the necessary technological improvements for the proper development of professional optometric practice.

Justify the clinical usefulness of exploratory techniques that analyse the anterior, middle and posterior ocular segments.

Know and understand, within the area of the degree, inequalities based on sex and gender in society; integrate different needs and preferences based on sex and gender into the design of solutions and problem-solving.

Propose creative and innovative solutions to complex situations or problems within the field of knowledge to respond to diverse professional and social needs.

Understand examples of applications of current clinical exploration equipment.

Understand ocular photography: retinography.

Understand the techniques for examining the retinal nerve fibre layer.

Understand the types of anterior and middle segment analysers.

Use various ocular examination techniques from a clinical perspective.

DESCRIPTION OF CONTENTS

Topic 1 - Types of anterior and intermediate segment analyzers
The main analyzers for the anterior and intermediate segment are presented, with special attention to tear film analysis, corneal morphology and biomechanics, esthesiometry, etc. Their diagnostic applications and basic imaging acquisition protocols are highlighted.

Topic 2 - Evaluation of ocular photography: fundus imaging
This topic focuses on the assessment of digital fundus photography, analysing image quality, contrast, and sharpness required to identify pathological signs in the retina. Interpretation criteria for structures such as the optic disc, macula, and retinal vessels are described. Finally, acquisition protocols and common artifacts are reviewed, along with their correction.

Topic 3 - Examination techniques of the retinal nerve fiber layer
This topic reviews the main techniques for examining the retinal nerve fiber layer, such as high-resolution OCT, scanning laser polarimetry, and confocal scanning laser tomography. Their applications in RNFL thickness quantification and early detection of conditions like glaucoma are highlighted. Acquisition protocols, segmentation procedures, and image quality criteria are also explained.

Topic 4 - Practical examples of current clinical examination equipment applications
This topic presents clinical cases that illustrate the real-world application of the theoretical content covered in the previous topics.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	22,00
Seminar	8,00
Total hours	**30,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	15,00
Independent study and work	25,00
Preparation of lessons	0,00

Preparation for assessment activities	5,00
Resolution of case studies	0,00
Total hours	**45,00**

TEACHING METHODOLOGY

The course combines lectures and seminars.

Lectures:
An expository method (lecture-based) is used, supported by projected audiovisual materials (images, videos, and diagrams), facilitating the understanding of concepts and techniques.

Seminars:
Clinical case resolution and group and/or individual assignments.

EVALUATION

The final grade is obtained by weighting two components according to the following criteria, minimum thresholds, and specifications:

- Final exam (60%) - This will consist of a multiple-choice test in which incorrect answers will result in point deductions. To be counted, a minimum score of 4 out of 10 is required.
- Continuous assessment (40%) - This includes assignments that students must submit by the deadline set by the instructor. A minimum score of 4 out of 10 is required for this component to be counted.

In the first session, the final grade is the weighted sum of both components.
In the second session, the same weightings, requirements, and minimums are maintained (60% exam and 40% continuous assessment), and any part scored below 4 must be retaken.

REFERENCES

Basic references:

- Montés-Micó R. *Optometría. Principios básicos y aplicación clínica.* Elsevier; 2011. ISBN 978-8480868228
- Montés-Micó R. *Optometría: Aspectos avanzados y consideraciones especiales.* Elsevier; 2011. ISBN 978-8480868907

Complementary references:

- Kanski J.J. *Clinical Ophthalmology: A Systematic Approach.* Saunders; 2011 (7.ª ed.). ISBN 978-0702040931.
- Kaschke M., Donnerhacke K.H., Rill M.S. *Optical Devices in Ophthalmology and Optometry: Technology, Design Principles and Clinical Applications.* Wiley-VCH; 2014. ISBN 978-3527410682.
- Yogesan K., Cuadros J., Goldschmidt L. *Digital Teleretinal Screening: Teleophthalmology in Practice.* Springer; 2012. ISBN 978-3642258091.
- Mohammadpour M. *Diagnostics in Ocular Imaging: Cornea, Retina, Glaucoma and Orbit.* Springer; 2020. ISBN 978-3030548629.
- Michalewska Z., Nawrocki J. *Atlas of Swept Source Optical Coherence Tomography.* Springer; 2017. ISBN 978-3319498393.