

**COURSE DATA****DATA SUBJECT****Code:** 34310**Name:** Binocular vision anomalies**Cycle:** Undergraduate Studies**ECTS Credits:** 4.5**Academic year:** 2026-27**STUDY (S)**

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

**SUBJECT-MATTER**

Degree	Subject-matter	Character
1207 - Degree in Optics and Optometry	Ocular pathology and pharmacology	COMPULSORY

**COORDINATION**

BUENO GIMENO INMACULADA

**SUMMARY**

This subject examines the various defects binoculars, the fundamentals of techniques to diagnose and measure them, and the different therapies and the criteria on which you base your prescription.

The main objective of this course is to train optometrist in a series of theoretical knowledge and practical skills that allow detection tasks and different treatment of binocular vision anomalies, so the student must acquire the knowledge necessary to assess the various disorders of binocular vision in all kinds of people, even those requiring special cases where there are objective methods of communication problems. You should also be able to evaluate cases neuroftalmológicas etiologies. Also must be able to apply treatments, visual therapy methods and application of prisms or redirect the patient to other health professionals.

**PREVIOUS KNOWLEDGE****RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE**

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



## **OTHER REQUIREMENTS**

To successfully address the subject, it is essential that the student, upon arriving at this subject, possess previous knowledge of Optometry I, Practices of Optometry I, the basis of Physiological Optics, Vision Psychophysics, Binocular Vision, Optometry II, Practices of Optometry II and Optometry III..

## **COMPETENCES / LEARNING OUTCOMES**

### **1207 - Degree in Optics and Optometry**

To apply standard psychophysical techniques to characterize anomalous visual systems.

To detect and to assess the main ophthalmological disorders, in order to refer patients to the ophthalmologist for study and treatment.

To know and to apply health education techniques and the main generic eye health problems. To know the principles of health and disease.

To know and to apply the procedures and indications of the different methods of clinical examination and complementary diagnostic techniques.

To know some of the most common psychophysical techniques in clinical practice.

To know the epidemiological models of the main visual pathologies.

To know the forms of presentation and general routes of administration of drugs.

To know the general principles of pharmacokinetics and pharmacodynamics.

To know the manifestations of systemic diseases at the ocular level.

To know the manifestations of the pathological processes and the mechanisms by which the main human diseases occur.

To know the most frequent adverse systemic effects after the application of the usual ocular topical drugs.

To know the ocular topical preparations, with special attention to the use of drugs that facilitate the visual and optometric examination.

To know the pharmacological actions, the collateral effects and drug interactions.

To know the properties and functions of the different elements that make up the visual system.

To know the symptoms of visual diseases and to recognize the signs associated with them. To recognize the alterations that modify normal functioning and trigger pathological processes that affect vision.

To recognize the different types of mechanisms and pathophysiological processes that trigger eye



diseases.

## DESCRIPTION OF CONTENTS

### **Thematic unit 1. specific investigation or evaluation**

Anatomical and neurological foundations of ocular motility are reviewed, as well as the etiology and clinical evaluation of binocular vision anomalies and strabismus.

- A review is made of the anatomy of the extraocular muscles, their innervation and main actions.
- The etiology of binocular vision anomalies, sensory adaptations in strabismus and the specific optometric examination in these cases are addressed.

### **Thematic unit 2. amblyopia assessment and treatment**

This unit covers in detail the clinical assessment and therapeutic options for amblyopia, with a focus on emerging technologies.

- The second unit explores in depth the assessment and treatment of amblyopia, with special emphasis on new technologies applied to therapy.

### **Thematic unit 3. diagnosis and treatment of strabismus**

Main types of strabismus are analyzed, including their differential diagnosis and commonly used treatment strategies in clinical practice.

- The third unit studies the types of strabismus, their diagnosis and treatment: esotropias, exotropias, vertical deviations and oculomotor palsies.

### **Thematic unit 4. treatment and prescription**

The basics of surgical and pharmacological treatment of strabismus are reviewed, as well as clinical applications and prescription criteria for prisms.

- The fourth unit focuses on the basic principles of strabismus treatment, especially



surgical and pharmacological approaches.

- It also includes a brief review of the clinical use of prisms, how they should be prescribed and their tolerability.

## WORKLOAD

### PRESENCIAL ACTIVITIES

Activity	Hours
Tutorials	7,50
Theory	30,00
Other activities	7,50
<b>Total hours</b>	<b>45,00</b>

### NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	5,00
Individual or group project	20,00
Independent study and work	15,00
Preparation of lessons	10,00
Preparation for assessment activities	12,50
Resolution of case studies	5,00
<b>Total hours</b>	<b>67,50</b>

## TEACHING METHODOLOGY

Theoretical classes: face-to-face sessions in which the expository lecture method will be used and the theoretical content of the course will be delivered. These sessions will be supported by audiovisual methodology.

Seminars: conducted in small groups to encourage student participation, during which real cases will be proposed for analysis and team-based resolution.

Problem-based learning: practical exercises will be developed based on the theoretical content.

Supervised projects: students will analyze and discuss specific topics of the course with active participation, both individually and in groups. At the same time, the instructor can monitor each student's work on an individual basis.

Tutorials: individual meetings to foster the student-teacher connection and provide guidance on the various activities the student must carry out.



Laboratory practicals: where theoretical concepts can be applied in the optometry office.

## EVALUATION

The final grade for the course is structured into four components, with the following weighting and minimum requirements:

- Written exam: 60 % of the total grade.
- Group project and presentation: 20 % of the total grade.
- In-class question resolution: 10 % of the total grade.
- Laboratory practicals (two completed clinical cases): 10 % of the total grade.

To pass in the first sitting, students must:

1. Achieve at least 50 % of the points in each component (i.e., 30 % of the final grade on the exam, 10 % on the group project, 5 % on participation, and 5 % on practicals).
2. Obtain an overall grade of almost 5/10.

In the first sitting:

- If they fail only the exam (less than 50 % of that component), they may retake it in the second sitting without affecting the grades of the other components.
- If they fail only the continuous assessment (project, participation, or practicals), they must sit the second-sitting exam, which will cover all failed continuous assessment components.
- If they fail both the exam and any continuous assessment component, in the second sitting they must retake the exam and recover the failed continuous components through the same exam.

In the second sitting:

- The written exam counts for 100 % of the grade, covering the theoretical part and all suspended continuous assessment activities.

Those who passed the continuous assessment in the first sitting will retain that score and only need to pass the written exam with the same minimum requirement (50 % of that component) and achieve an overall grade of almost 5/10.

## REFERENCES

**Basic references:**



- Perea, J. *Estrabismos*. Artes Gráficas Toledo, España, 2008.
- Martín Herranz, R., Vecilla Antolínez, G. *Manual de optometría*. Editorial Médica Panamericana, 2011.
- Caloroso, E., Rouse, M. *Tratamiento clínico del estrabismo*. Editorial Ciagami, Madrid, 1999.

**Complementary references:**

- Montés-Micó, R. *Optometría: aspectos avanzados y consideraciones especiales*. Elsevier, Barcelona, 2011.
- Von Noorden, G. K. *Atlas de estrabismos*. Editorial Ciagami, Madrid, 1997.