

## 26808 - Optometry Laboratory

### Información del Plan Docente

Academic Year	2016/17
Academic center	100 - Facultad de Ciencias
Degree	297 - Degree in Optics and Optometry
ECTS	12.0
Course	2
Period	Annual
Subject Type	Compulsory
Module	---

### 1. Basic info

#### 1.1. Recommendations to take this course

#### 1.2. Activities and key dates for the course

### 2. Initiation

#### 2.1. Learning outcomes that define the subject

#### 2.2. Introduction

### 3. Context and competences

#### 3.1. Goals

#### 3.2. Context and meaning of the subject in the degree

#### 3.3. Competences

#### 3.4. Importance of learning outcomes

### 4. Evaluation

### 5. Activities and resources

#### 5.1. General methodological presentation

#### GENERAL METHODOLOGICAL PRESENTATION

**The learning process for this subject is based on the following aspects:**

The general methodology of the subject is determined by the organization of matter within the plan of Optometry Degree studies. The learning of this subject it is structured in: Optometry I, Optometry II and Optometry Laboratory.

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The first two subjects, Optometry I and Optometry II, focus on the theoretical and conceptual aspects and the Optometry Laboratory is fully oriented in practical learning.

### 5.2.Learning activities

The content of the educational programming that will be needed to reach the desired outcomes includes the following activities:

**1 :**

Training activity I (2 ECTS). To acquire knowledge on the practical aspects of Optometry.

The methodology is based on conferences/seminars addressed to the whole group of students. This activity is complemented with personalized or in small groups teaching.

**2 :**

Training activity II (2 ECTS). To acquire confidence in handling patients in the clinic and to develop a comprehensive optometric examination.

The methodology is based on practice skills training in the laboratory through small groups that can be two or three people allowing personalized teaching. Before and after the laboratory session each student must perform a series of questions about practical aspects of this practice. Additionally, each group has to prepare a laboratory report.

Moodle will be as a part of the teaching component. Moodle will be used to disseminate teaching materials and host forums.

### 5.3.Program

- Understand and make use of the material of the laboratory. Measurement of visual acuity (VA) under different conditions. Evaluation of Contrast Sensitivity Function (CSF).
- Measurement of monocular amplitude of accommodation and accommodative flexibility. Evaluation of color vision. Discussion of the diagnostic examination process with emphasis on the patient history interview.
- Objective examination of refractive errors: 1) Introduction to [retinoscopy](#) (spherical and cylindrical errors) and 2) Autorefractometer. Acquire skills to neutralize refractive errors using the retinoscope.
- Subjective examination of refractive errors: 1) Determination of the spherical power (Fogging: Maximum plus power for best visual acuity (MPMAV)) and 2) Determination of the cylindrical axis and the cylindrical power for the patient (Clock dial test and Jackson Cross Cylinder (JCC)).
- Evaluation of corneal topography and keratometry.
- Subjective examination: Bi-ocular balancing: for VA equal and unequal between both eyes. Binocular balancing

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- Slit-lamp I: Direct illumination techniques (diffuse illumination, tangential illumination and specular reflection). Introduction of the methods for the diagnosis of dry eye: tear meniscus height measurement, lacrimal secretion (Schirmer's test) and the stability of lacrimal film by tear film break up time (BUT) with fluorescein, noninvasive tear break up time (NIBUT).
- Revision of all studied techniques. Discussion of optometric examination and patient history interview. Practice with real patients with emphasis on the objective and subjective refraction.
- Evaluation of the visual field and retinal integrity: Campimetry. Direct ophthalmoscopy. Retinography.
- Subjective Examination: Revision of the optometric examination. Measurement of the intraocular pressure: non-invasive tonometry. Slit-lamp II: indirect illumination, retroillumination and Van Herrick Technique.
- Binocular vision and space perception: fusion, diplopia, suppression, and stereopsis.
- Ocular motility and pupillary response. Measurements of deviation with objective tests (Cover test). Revision of all studied techniques.
- Revision of all studied techniques. Practice with real patients.
- Binocular vision: relationship between convergence-accommodation. Measurement of binocular amplitude of accommodation and accommodative flexibility. Evaluation of accommodative response. Revision of the bi-ocular and binocular balancing (subjective refraction).
- Evaluation of the near point of convergence (PPC). Measurements of deviation with subjective tests (prisms or Maddox Double Rod Test). Measurements of relative's vergences. Evaluation of negative relative accommodation (NRA) and positive relative accommodation (PRA). Calculate of accommodative convergence/accommodation (AC/A) ratio.
- Evaluation of fixation disparity with objective and subjective techniques. Post-images tests. Evaluation of fixation disparity with associated phoria. Evaluation of fixation disparity curve parameters.
- Revision of all studied techniques with emphasis on subjective refraction and evaluation of the binocular system. Calculate/Finding the near addition.
- Revision of all studied techniques. Practice with real patients.
- Revision of all studied techniques. Practice with real patients.

### 5.4.Planning and scheduling

#### Schedule sessions and presentation of works

The dates of beginning and end of the teaching activities will be provided by the University

or by the Faculty of Sciences.

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The course consists of 10 lectures divided into sessions of a 2-hour during all year and a 4'5- hour laboratory session each week (20 sessions).

Before and after the laboratory session each student must perform a series of questions about practical aspects of this practice (via Moodle).

### 5.5. Bibliography and recommended resources

- BB** Antona, B.. Procedimientos clínicos para la evaluación de la visión binocular. Netbiblo, 2009
- BB** Borish's clinical refraction / editor, William J. Benjamin ; consultant, Irvin M. Borish. - 2nd ed. St. Louis : Butterworth Heinemann-Elsevier, cop. 2006
- BB** Carlson, N.. Procedimientos clínicos en el examen visual. Genova. 1994
- BB** Carlson, Nancy B.. Clinical procedures for ocular examination / Nancy B. Carlson, Daniel Kurtz . 3rd ed. New York : McGraw-Hill, cop. 2004
- BB** Cotter, S.. Prismas ópticos. Aplicaciones clínicas Mosby. 1996
- BB** Evans, Bruce. Pickwell's Binocular vision anomalies : investigation and treatment / Bruce J. W. Evans . - 4th ed. repr. London : Butterworths, 2005
- BB** Furlan, Walter. Fundamentos de optometría : refracción ocular / Walter Furlan, Javier García Monreal, Laura Muñoz Escrivá . - 2ª ed. corr. y aum. Valencia : Universitat de Valencia, 2009
- BB** Furlan, Walter. Fundamentos de optometría : refracción ocular / Walter Furlan, Javier García Monreal, Laura Muñoz Escrivá . - 2ª ed. corr. y aum. Valencia : Universitat de Valencia, 2009

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- BB** Grosvenor, Theodore. Optometría de atención primaria / Theodore Grosvenor ; [traducción, Carlos Luis Saona Santos] . - 1 ed., reimp. Barcelona : Masson, 2005
- BB** Kanski, Jack J.. Oftalmología clínica / Jack J. Kanski ; fotógrafos, Irina Gout, Kulwant Sehmi, Anne Bolton ; ilustradores, Terry R. Tarrant, Phil Sidaway ; [revisión científica, Juan Antonio Durán de la Colina] . - 6ª ed. Ámsterdam ; Barcelona ; Madrid [etc.] : Elsevier, cop. 2009
- BB** Martín Herranz, Raúl. Manual de optometría / Raúl Martín Herranz, Gerardo Vecilla Antolínez . Buenos Aires : Editorial Médica Panamericana, cop. 2011
- BB** Montés-Micó, Robert. Optometría : principios básicos y aplicación clínica / Robert Montés-Micó . Barcelona : Elsevier, 2011
- BB** Optometría : manual de exámenes clínicos / M. Rosa Borrás García... [et al.] . 3ª ed. Barcelona : UPC, 1999
- BB** Optometry : science, techniques and clinical management / edited by Mark Rosenfield, Nicola Logan ; contributing editor, Keith Edwards . 2nd ed. Edinburgh [etc.] : Butterworth Heinemann, 2009
- BB** Scheiman, Mitchell. Clinical management of binocular vision : heterophoric, accommodative, and eye movement disorders / Mitchell Scheiman, Bruce Wick . 3rd ed. Philadelphia : Lippincott Williams & Wilkins, 2008
- BB** Visión binocular : diagnóstico y tratamiento / M. Rosa Borrás García ... [et al.] . - 1ªed., 1ª reimpr. Barcelona : UPC, 1999
- BB** Wright KW, Spiegel PH. Oftalmología pediátrica y estrabismo. (Los requisitos en oftalmología). Harcourt. 2001