

## 370520 - ADAPTACIO - Ophthalmic Optics, Workshop and Dispensing

Coordinating unit: 370 - FOOT - Terrassa School of Optics and Optometry  
Teaching unit: 731 - OO - Department of Optics and Optometry  
Academic year: 2019  
Degree: BACHELOR'S DEGREE IN OPTICS AND OPTOMETRY (Syllabus 2009). (Teaching unit Compulsory)  
ECTS credits: 9 Teaching languages: Catalan

### Teaching staff

Coordinator: MARTA FRANSOY BEL (<http://futur.upc.edu/MartaFransoyBel>)  
Others: JOAN ANTONI MARTÍNEZ RODA

### Opening hours

Timetable: The attention to the student will be done by means of previous appointment, that it is necessary to request through the intranet of the subject.

### Degree competences to which the subject contributes

Specific:

1. Acquire skills in patient care
2. Apply the techniques and develop the necessary skills to proceed to the assembly and repair of all types of glasses (prescription, protective, or optical aid), and their adaptation and adjustment to the user.
3. Evaluate, assess the causes and solve the cases of maladjustment of the user of glasses or optical aids
4. Understand the different functions that can have glasses: compensation of ametropias, eye protection to general and labour use, low vision aids.
6. Establish criteria of balance between the aesthetic and functional aspects of the compensating element (glasses and visual aids).
7. Do the control of quality of the glasses or optical aids made once the assembly.
8. Do the following-up of the treatment and value the satisfaction of the user
9. Making use of machinery, instruments and tools needed to make assembly, adjustments, repairs and quality control of finished product.
11. Individualize treatment planning.
12. Interpret refractive test results to determine the suitable optical prescription.
13. To interpret the results and determine if necessary a treatment.
14. Recognize the characteristics of different population groups according to the age, or demands or visual needs.
15. Recognize if the glasses meet the standards referred to in ophthalmic optics, optical aids and eye protection.
16. Select the appropriate optical aid according to the patient's visual limitations.
17. Being able to take, treat, represent and interpret experimental data. "Use basic laboratory equipment and

## 370520 - ADAPTACIO - Ophthalmic Optics, Workshop and Dispensing

techniques"

18. Transmit the user the necessary information for make a good use of the compensator system (prescription glasses, protective glasses or optical aids)
20. Value the effects (perceptual changes) caused by the glasses, optical aids and protection elements in the visual system.
21. To evaluate the prescription given the different population groups (age, activities ...), and set specific criteria for selecting frame and lens for each case.
22. Value the impact parameters psychoaesthetic, or psychosocial and economic impact to the user.

Generical:

23. Adaptation of all the fields of professional activity envers compatible aspects with the medium ambient (recycling, reuse of the materials,...)
24. Acquire communication techniques appropriate to ensure the success of teamwork
25. Capacity to assume different roles within the team, leadership, coordination with other members
26. Develop empathy with people
27. Judgments (ratings) reports and surveys
28. Flexibility to integrate into dynamic environments, multidisciplinary and multicultural.
29. Encourage methodical work, rigorous, consistent and innovative
30. Interpret and use non-verbal language
32. Locate new information and the interpretation of it in its context.

### Teaching methodology

- Explanation lectures by teachers
- Dynamic lectures for solving problems and seminars of real cases
- Laboratory sessions
- Participation in PRACTICUM 2 Dispensing at CUV
- Preparation of a portfolio
- Cooperative learning in classroom and laboratory
- Problem-based learning (PBL) to solve a real case of adaptation
- Use of offimatic tools

### Learning objectives of the subject

At the end of the course the student must be able to:

- Know the processes of design, manufacture and selection of ophthalmic lenses and glasses frames.
- Use the techniques of analysis, measurement, correction and control of optical compensating systems on the visual system, in order to optimize their design and adaptation.
- Evaluate the impact of the aberrations of ophthalmic lenses that compensate for ametropies in the vision of the user of glasses.

## 370520 - ADAPTACIO - Ophthalmic Optics, Workshop and Dispensing

- Evaluate the monocular and binocular effects of ophthalmic lenses.
  - Know the properties and differential characteristics of the eye protection glasses.
  - Calculate the most relevant geometrical, optical and physical parameters that characterize all types of ophthalmic lens used in optometric prescriptions and know how to relate them to the properties that intervene in the adaptation process.
  - Carry out the patient / user care protocol to the consultation / optometric clinic to adapt the glasses.
  - Prescribe, monitor and monitor the glasses as a treatment of ametropia compensation after the complete optometric examination.
  - Select the appropriate frames and lenses according to the specific needs and characteristics of each user.
  - Use the techniques of centering, adaptation, assembly and manipulation specific for all types of optometric prescription glasses and protection goggles.
  - Carry out the delivery of the glasses to the user, giving the precise instructions and doing the necessary anatomical adjustment operations
  - Become familiar with the commercialization of the products, their storage, conservation and the information that must be offered to the user.
  - Apply the knowledge acquired in the previous modules, in Optical, Clinics and Hospitals, Health Centers and Sector Companies.
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### Study load

Total learning time: 216h	Hours large group:	0h	0.00%
	Hours medium group:	48h	22.22%
	Hours small group:	42h	19.44%
	Guided activities:	0h	0.00%
	Self study:	126h	58.33%

## 370520 - ADAPTACIO - Ophthalmic Optics, Workshop and Dispensing

### Content

(ENG) 1.INTRODUCTION TO GLASSES' FITTING	Learning time: 6h Theory classes: 2h Laboratory classes: 2h Self study : 2h
Description: In this first class, is presented: - Fitting of glasses as the major treatment of vision defects, in the context of health sciences. - The impact of the adaptation of glasses in the quality of vision, eye protection, visual performance and self-image users.	
2. GLASSES FITTING PROTOCOL	Learning time: 4h Theory classes: 2h Laboratory classes: 2h
Description: This topic deals with the systematic method of choosing, adjusting, focusing, assembling and adapting glasses to a suari with guarantees of success and of control and monitoring of maladaptations.	
3. FRAME SELECTION	Learning time: 9h Theory classes: 3h Laboratory classes: 6h
Description: This topic explains: -the materials used for the manufacture of plastic, metal and mixed frames, and the manufacturing process according to the material. The avant-garde materials. -the criteria of selection of the ideal frame for each user, based on facial criteria, prescription and use. -the criteria for aligning and adjusting the anatomical frames and the management of maladaptations.	

## 370520 - ADAPTACIO - Ophthalmic Optics, Workshop and Dispensing

(ENG) 3. LENS SELECTION	Learning time: 18h Theory classes: 6h Laboratory classes: 2h Self study : 10h
Description: This topic includes: <ul style="list-style-type: none"> <li>- The minimum lens diameter, and different ways to calculate it.</li> <li>- The implications of refraction of the patient in the choice of material and geometry of the lens.</li> <li>- The conditions of use of glasses and convenience of surface treatments on the lenses.</li> <li>- Calculation and analysis of the distribution of thicknesses beveled lenses.</li> </ul>	
(ENG) 5. MONOFOCAL LENS PRESCRIPTION	Learning time: 34h Theory classes: 8h Laboratory classes: 12h Self study : 14h
Description: In this topic, several sections are developed: <ul style="list-style-type: none"> <li>- Monocular effects of monofocal lenses: visual field change, variation in image size, the effect of the vertex distance effect of pantoscopic and facial tilt on the power of lenses.</li> <li>- Binocular effects of lenses: Magnification of lenses, induced aniseikonia, eiconic lenses design, induced binocular imbalances, centering lenses according to the main use relationship.</li> <li>- The effects of high power prescriptions: implications of netting with glasses in aphakia conditions, high hyperopia and high myopia, differential criteria selection of frames and lenses, and control conditions.</li> <li>- The fitting, adjustment and adaptation of single vision prescriptions glasses.</li> </ul>	
(ENG) 6. PRISMATIC LENS PRESCRIPTION	Learning time: 26h Theory classes: 6h Laboratory classes: 6h Self study : 14h
Description: This subject is developed in four sections: <ul style="list-style-type: none"> <li>- Requirements to produce a prismatic prescription in both, astigmatic and spherical lenses.</li> <li>- The impact of prismatic centering errors.</li> <li>- Induction of decentered prisms for special cases.</li> <li>- User information of perceptual changes associated.</li> <li>- The analysis and solution of the problems of maladjustment.</li> <li>- The installation, adjustment and adaptation of glasses with prismatic prescriptions.</li> </ul>	

## 370520 - ADAPTACIO - Ophthalmic Optics, Workshop and Dispensing

<p>(ENG) 7. PRESCRIPTIONS WITH MULTIFOCAL LENSES</p>	<p>Learning time: 11h</p> <p>Theory classes: 4h Practical classes: 0h Laboratory classes: 2h Guided activities: 0h Self study : 5h</p>
<p>Description:</p> <p>The content of this topic is divided in five sections:</p> <ul style="list-style-type: none"> <li>- The need for bifocal prescription and presbyopia compensation systems available.</li> <li>- Centering techniques and control prismatic bifocal prescriptions.</li> <li>- Information to the user for the proper use of prescription.</li> <li>- The analysis and solution of the problems of maladjustment.</li> <li>- The fitting, adjustment and adaptation of glasses with prescription bifocals.</li> </ul>	
<p>(ENG) 7. PRESCRIPTIONS WITH OCUPATIONAL LENSES</p>	<p>Learning time: 28h</p> <p>Theory classes: 7h Practical classes: 0h Laboratory classes: 6h Guided activities: 0h Self study : 15h</p>
<p>Description:</p> <p>In this subject, three main sections are developed:</p> <ul style="list-style-type: none"> <li>- The need for multifocal prescription and optical systems available.</li> <li>- Centering techniques and adaptation of multifocal prescriptions.</li> <li>- Information to the user the proper use of prescription.</li> </ul>	
<p>(ENG) 9. OCULAR PROTECTION PRESCRIPTIONS</p>	<p>Learning time: 10h</p> <p>Theory classes: 4h Practical classes: 0h Laboratory classes: 0h Guided activities: 0h Self study : 6h</p>
<p>Description:</p> <p>This topic is developed in several sections:</p> <ul style="list-style-type: none"> <li>- The need for eye protection against radiation and other external agents.</li> <li>- The areas of eye protection and current regulations.</li> <li>- Protection systems available according to the main use and user need.</li> <li>- Requirements, specifications and classification of protective eyewear.</li> <li>- The performance of the optometrist in the selection and adaptation of the eye protector.</li> <li>- The analysis and solution of special cases.</li> </ul>	

## 370520 - ADAPTACIO - Ophthalmic Optics, Workshop and Dispensing

### Qualification system

Overall qualification will be the result of a face-to-face, written and individual test, scores obtained in laboratory and workshops, completion of portfolio, activities proposed in the classroom, and the actual case of adaptation, with the following weighting:

- 20% Midterm exam
- 30 % Final exam
- 10% Actual case of glasses fitting
- 30 % Workshop and dispensing Lab
- 10% AIMU Portfolio

Information on the subject assessment activities will be detailed in the intranet (Atenea digital campus)

### Regulations for carrying out activities

All submissions must match the guidelines published on the intranet (Atenea digital campus). On the contrary, it won't be assessed.

### Bibliography

#### Basic:

- Salvado, J. [et al.]. Tecnología óptica: lentes oftálmicas, diseño y adaptación [on line]. Barcelona: Edicions UPC, 2001 [Consultation: 08/01/2016]. Available on: <<http://hdl.handle.net/2099.3/36343>>. ISBN 8483014742.
- Fannin, T.; Grosvenor, T. Clinical optics. 2nd ed. Boston: Butterworth-Heinemann, 1996. ISBN 0750696702.
- Jalie, M. The principles of ophthalmic lenses. 4th ed. London: The Association of Dispensing Opticians, 1984. ISBN 0900099208.
- Jalie, Mo. Ophthalmic lenses & dispensing. 3rd ed. Oxford: Butterworth Heinemann, 2008. ISBN 9780750688949.
- Brooks, Clifford W. System for ophthalmic dispensing. 3rd ed. St. Louis: Butterworth Heinemann, 2006. ISBN 9780750674805.
- Horne, D. F. Spectacle lens technology. Bristol: Adam Hilger, 1978. ISBN 0852742789.
- Bohn, Heiner. Tecnología para ópticos, vol. 1. [s.n. : s.l.], 1989-1990. De núm. 25 (abril 1987) a núm. 35 (novembre 1988).
- Bohn, Heiner. Tecnología para ópticos, vol. 2. [s.n. : s.l.], 1989-1990. De núm. 37 (març 1989) a núm. 58.
- Schulz, Wolfgang. Técnica de centrado. [s.n. : s.l.], 1987-1988. De núm. 25 (abril 1987) a núm. 35 (novembre 1988).

#### Complementary:

- Drew, Ralph. Professional ophthalmic dispensing. Chicago: The Professional Press, 1970.
- Salvado, J. [et al.]. Lentes oftálmicas: problemas. 2a ed. Barcelona: Edicions UPC, 1994. ISBN 8476534299.
- Catàlegs comercials de lents oftàlmiques i muntures, i publicacions internes d'empreses del sector.

#### Others resources: