



## Course guide

### 370016 - ADAPT - Fitting of Spectacles

**Last modified:** 21/03/2024

**Unit in charge:** Terrassa School of Optics and Optometry  
**Teaching unit:** 731 - OO - Department of Optics and Optometry.

**Degree:** BACHELOR'S DEGREE IN OPTICS AND OPTOMETRY (Syllabus 2020). (Compulsory subject).

**Academic year:** 2023    **ECTS Credits:** 6.0    **Languages:** Catalan, Spanish

#### LECTURER

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**Coordinating lecturer:** MARTA FRANSOY BEL (<http://futur.upc.edu/MartaFransoyBel>)

**Others:**

Teoria:  
Marta Fransoy Bel

Pràctiques:  
Marta Fransoy Bel  
Marta Lupón i Bas  
Ana I. Megino Quesada

Qualsevol canvi respecte a l'equip docent es publicarà al Campus Virtual a l'inici de cada curs.

#### PRIOR SKILLS

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For the maximum use of the subject GLASSES ADAPTATION (Q4)

It is necessary to have achieved and integrated the knowledge and skills of the subject OPHTHALMIC LENSES (Q3).

It is advisable to have updated knowledge of:

GEOMETRIC OPTICS (Q1), VISUAL OPTICS (Q2), and OPTICAL MATERIALS (Q2), as they are the basis of Ophthalmic Optics.

#### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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**Specific:**

CE07. (ENG) The ability to understand and manage basic laboratory materials and techniques.

CE10. (ENG) The ability to understand and calculate the most relevant geometric, optical and physical parameters that characterise the different kinds of ophthalmic lenses used in optometric prescriptions and to associate them with the properties involved in the fitting process. The ability to understand the processes of selecting, manufacturing and designing lenses. The ability to calculate the geometric parameters of particular visual compensation systems: vision loss, intraocular lenses, contact lenses and ophthalmic lenses.

CE12. Understand and make use of techniques for analysing, measuring, correcting and monitoring the effects of compensatory optical systems on the visual system in order to optimise their design and fit. Make use of the techniques of centring, fitting, mounting and adjusting on all kinds of optometrically prescribed lenses, visual aids and protective eyewear. Prescribe, monitor and follow up with optical corrections. Identify and analyse environmental and workplace risk factors that could lead to visual issues.

**Generical:**

CG2. Carry out each stage of visual examinations effectively: medical history, selection and implementation of diagnostic tests, establishment of a prognosis, selection and execution of treatment and, if necessary, preparation of referral reports that establish levels of collaboration with other professionals, to ensure the best possible care for the patient.

CG3. Advise and guide patients and relatives during the entire treatment.

CG4. Critically reflect on the clinical, scientific, ethical and social issues involved in the professional practice of optometry, understand the scientific foundations of optics and optometry and critically evaluate terminology, clinical trials and research methods related to optics and optometry.

CG5. Give opinions and produce reports and expert reports when necessary.

CG9. Expand and update one's professional abilities through continuing education.

CG14. Demonstrate knowledge, skills and abilities in patient healthcare.

CG15. (ENG) Demostrar capacitat per actuar com a agent d'atenció primària visual.

**Transversal:**

CT3. Teamwork. To be able to work as a member of a multidisciplinary team, either as a base member or undertaking managerial decisions aiming at developing projects from a practical and responsible standpoint, adopting commitments given the available resources

CT4. (ENG) Teamwork. The ability to work as a member of an interdisciplinary team, as just another member or in a leadership role, who can contribute to developing projects pragmatically and with a sense of responsibility and make commitments that take into account the resources that are available.

CT5. Efficient use of information resources. To manage data and technical and scientific information acquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management

CT6. Independent learning. Identify and overcome gaps in one's knowledge by thinking critically and choosing the best approach to extending one's knowledge.

**TEACHING METHODOLOGY**

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**LEARNING OBJECTIVES OF THE SUBJECT**

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1. Understand functions that glasses can have: compensation for ametropia, convergence or postural deficiencies, eye protection, or low vision aids.
2. Interpret the results of refractive tests to determine glasses prescription.
3. Individualize the prescription of treatment with glasses and assess aspects such as the user's psycho-aesthetic, psychosocial or economic impact.
4. Determine if glasses comply with the UNE regulations for ophthalmic optics and eye protection.
5. Evaluate, assess the causes, and solve cases of glasses maladjustment.
6. Make use of the procedures, machinery, instruments and tools necessary for the adaptation, adjustment, and assembly of glasses, and their quality control.

**STUDY LOAD**

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Type	Hours	Percentage
Hours medium group	30,0	20.00
Self study	90,0	60.00
Hours small group	30,0	20.00

**Total learning time:** 150 h



## CONTENTS

### title english

**Description:**

content english

**Related competencies :**

CT6. Independent learning. Identify and overcome gaps in one's knowledge by thinking critically and choosing the best approach to extending one's knowledge.

**Full-or-part-time:** 1h

Self study : 1h

### 1. GLASSES' FITTING PROTOCOL

**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.

**Full-or-part-time:** 11h

Theory classes: 4h

Practical classes: 2h

Self study : 5h

### 2. FRAME SELECTION AND FITTING

**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.

**Full-or-part-time:** 20h

Theory classes: 4h

Practical classes: 6h

Self study : 10h

### 3. BEST LENS SELECTION

**Description:**

This topic includes:

- The minimum blank size, and different ways to calculate it.
- The implications of refraction of the patient in the choice of material and geometry of the lens.
- The conditions of use of glasses and convenience of surface treatments on the lenses.
- Calculation and analysis of the distribution of thicknesses beveled lenses.

**Full-or-part-time:** 16h

Theory classes: 4h

Practical classes: 2h

Self study : 10h

#### 4. MONOFOCAL GLASSES

**Description:**

In this topic, three sections are developed:

- 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.
- Binocular effects of lenses: Magnification of lenses, induced aniseikonia, eiconic lenses design, induced binocular imbalances, centering lenses according to the main use relationship.
- 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.

**Full-or-part-time:** 36h

Theory classes: 6h

Practical classes: 8h

Self study : 22h

#### 5. PRISMATIC LENS PRESCRIPTIONS

**Description:**

This topic is about:

- Requirements to produce a prismatic prescription in both, astigmatic and spherical lenses.
- The impact of prismatic centering errors.
- Induction of decentered prisms for special cases.
- User information of perceptual changes associated.
- The analysis and solution of the problems of maladjustment.
- The mounting, adjustment and adaptation of glasses with prismatic prescriptions.

**Full-or-part-time:** 18h

Theory classes: 6h

Practical classes: 2h

Self study : 10h

#### 6. MULTIFOCAL GLASSES: PROGRESSIVE VS. BIFOCAL ADDITION

**Description:**

This topic deals with:

- The need for multifocal prescription and presbyopia compensation systems available.
- Centering techniques and prismatic control for progressive and bifocal prescriptions.
- Information to the user for the proper use of prescription.
- The analysis and solution of the problems of maladjustment.

**Full-or-part-time:** 18h

Theory classes: 4h

Practical classes: 4h

Self study : 10h



## 7. OCUPATIONAL GLASSES

### Description:

This topic, about occupational glasses, deals with:

- The need for occupational prescription and optical systems available.
- Centering techniques and adaptation of occupational prescriptions.
- Information to the user the proper use of prescription.
- The fitting, adjustment and adaptation of glasses with occupational prescription.

### Full-or-part-time: 18h

Theory classes: 4h

Practical classes: 2h

Self study : 12h

## 8. EYE PROTECTION GLASSES

### Description:

Last topic of the course is about:

- The need for eye protection against radiation and other external agents.
- The areas of eye protection and current regulations.
- Protection systems available according to the main use and user need.
- Requirements, specifications and classification of protective eyewear.
- The performance of the optometrist in the selection and adaptation of the ey

### Full-or-part-time: 12h

Theory classes: 2h

Practical classes: 2h

Self study : 8h



## ACTIVITIES

### name english

#### Description:

A5: Optical Appliances:

- (5) physical characteristics and biological compatibility of frame materials,
- (6) specification and nomenclature of spectacle frame components,
- (7) optical and spectacle frame considerations of high-powered lenses,
- (8) spectacle magnification,
- (11) optical tolerances and physical requirements of ophthalmic lenses and frame materials,
- (12) spectacle applications.

A6: Occupational Optics:

- (3) eye protection and its regulations,

#### PRACTICAL:

The ability to advise, prescribe and dispense spectacles, or fit contact lenses, for VDU users and other vocational purposes.  
The ability to advise, prescribe and dispense spectacles for eye protective use.

**Full-or-part-time:** 60h

Practical classes: 30h

Laboratory classes: 30h

## GRADING SYSTEM

## BIBLIOGRAPHY

#### Basic:

- Salvadó J [et al.]. Tecnología óptica: Lentes oftálmicas, diseño y adaptación [on line]. Barcelona: Edicions UPC, 2001 [Consultation: 20/04/2022]. Available on: <http://hdl.handle.net/2099.3/36343>. ISBN 8483014742.
- Jalie, Mo. Ophthalmic lenses and dispensing. 3rd ed. Oxford: Butterworth Heinemann, 2008. ISBN 9780750688949.
- Brooks, Clifford W. System for ophthalmic dispensing [on line]. 3rd ed. St. Louis, MO: Butterworth Heinemann, 2007 [Consultation: 25/01/2023]. Available on: <https://www-sciencedirect-com.recursos.biblioteca.upc.edu/book/9780750674805/system-for-ophthalmic-dispensing>. ISBN 9780750674805.
- Fannin Troy E.; Grosvenor Theodore. Clinical optics. 2nd ed. Boston: Butterworth Heinemann, 1996. ISBN 0750696702.

#### Complementary:

- Boix y Palacián, J Miguel. Lentes progresivas: evolución científica hasta la quinta generación. Madrid: Complutense, 2000. ISBN 8474915864.
- Meister, Darryl. "Understanding position of wear". Vision Council Lens Technical Committee [on line]. 2013 [Consultation: 25/01/2023]. Available on: [http://opticampus.opti.vision/files/memo\\_on\\_understanding\\_the\\_position\\_of\\_wear.pdf](http://opticampus.opti.vision/files/memo_on_understanding_the_position_of_wear.pdf).
- Meister, Darryl J.. "Progressive lens dispensing: module 10". Carl Zeiss Vision GmbH [on line]. 2008 Available on: [http://opticampus.opti.vision/files/progressive\\_lens\\_dispensing.pdf](http://opticampus.opti.vision/files/progressive_lens_dispensing.pdf).

## RESOURCES

#### Other resources:

Assistance programs for the selection of ophthalmic lenses:

- PRATS ON-LINE (PRATS ophthalmic lens selection program)
- ESSILORPRO (ESSILOR Ophthalmic Lens ONLINE Selection Program)
- NATURLENS (NATURLENS ONLINE ophthalmic lens selection program)

Glasses adaptation parameters design and calculation program: <http://opticampus.opti.vision/tools/downloads.php> />

SPECTACLE OPTICS (Spectaculo Optics v2.0 Beta NEW VERSION)

- Optical analysis
- Tscherning analysis
- Recipe analysis
- Progressive analysis
- Spectral analysis