

Course guide

370016 - ADAPT - Fitting of Spectacles

Last modified: 27/06/2024

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: 2024 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

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

Others:

TEORIA:
Marta Fransoy Bel

PRÀCTIQUES:
Silvia Alonso Matarín
Marta Fransoy Bel
Alba Galdón Flores
Marta Lupón Bas

Qualsevol canvi respecte a l'equip docent es publicarà al Campus Virtual.

PRIOR SKILLS

For the maximum use of the subject SPECTACLE SELECTION AND FITTING (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.

REQUIREMENTS

To enroll in SPECTACLE SELECTION AND FITTING, it is highly recommended to have PASSED the subject OPHTHALMIC LENSES. At least, HAVING TAKEN IT.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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

DIRECTED LEARNING METHODOLOGY (classroom sessions and laboratory sessions):

MD1 - Participatory expository class of theoretical and practical content.

MD2 - Problem-based learning (PBL) and cooperative learning.

MD3 - Class solving exercises and/or practical cases related to the content of the subject, with the participation of the students.

MD4 - Practical laboratory sessions.

MD7 - Tutorials.

AUTONOMOUS LEARNING METHODOLOGY:

MD5 - Reading didactic material, texts and articles related to the contents of the subject.

Study the content of theory classes.

Consult the recommended bibliography.

MD6 - Carrying out exercises, assignments and resolving doubts through the ATENEA Virtual Campus.

Carry out the evaluable activities that are proposed, and deliver them within the established deadline and format.

Prepare the practices: Watch the corresponding videos, read the script and do the preliminary task (TP) to hand in at the beginning of each session.

Prepare weekly internship report (IP).

Working in a group in the real case of adaptation (CRA)

Prepare the subject portfolio (PFAU).

TO TAKE INTO ACCOUNT:

SUBJECT FOLLOW-UP: It is essential to consult Atenea often to receive TEACHER MESSAGES and actively participate in the FORUMS.

LEARNING OBJECTIVES OF THE SUBJECT

The learning goals of SPECTACLE SELECTION AND FITTING are the following:

1. To understand functions of eyeglasses: compensation for ametropia, vergence or postural deficiencies, eye protection, or aids for low vision.
2. To interpret the results of refractive examinations to determine the prescription for glasses.
3. To individualize the prescription of the treatment with glasses and assess aspects such as the psycho-aesthetic, psycho-social or economic impact for the user.
4. To determine if the glasses comply with the UNE regulations for ophthalmic optics and eye protection.
5. To evaluate, assess the causes, and solve cases of mismatched eyeglasses.
6. To make use of the procedures, machinery, instruments and tools necessary for the adaptation, adjustment and assembly of glasses, and their quality control.

STUDY LOAD

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

0. PRESENTATION AND INTRODUCTION TO SPECTACLE SELECTION AND FITTING

Description:

The first contact with EYEGLASSES ADAPTATION is this video, which should be viewed before the first classroom session.

Specific objectives:

To present teaching team, calendar and program of the classroom and laboratory sessions and the evaluation criteria to obtain the qualification.

To contextualize SPECTACLE SELECTION AND FITTING in the GOO and in the optician-optometrist profession.

Related activities:

BEGINNING COURSE ACTIVITY:

View the PRESENTATION AND INTRODUCTION video before the first classroom session, to be able to start with the first topic that deals with the protocol for selecting and fitting spectacles.

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: 2h

Self study : 2h

1. SPECTACLES SELECTIONS AND FITTING PROTOCOL

Description:

This topic deals with the systematic method of selecting, measuring parameters, centering, edging, assembling and fitting spectacles to a user with guarantees of success, of control and monitoring of complaints.

Related activities:

PRACTICE 1: Test of the level of handling of lensmeter. Questionnaire on the use of the lensmeter to mark prescriptions. It is advisable to review the concepts of ophthalmic lenses.

PRACTICE 2: Handling the catalogs of ophthalmic lens manufacturers.

ACP1: COMPLEMENTARY PRACTICE ACTIVITY: Uses of the ruler.

CRA-1: REAL CASE OF ADAPTATION: Formation of work groups and assignment of the case to the group.

Full-or-part-time: 17h

Theory classes: 3h

Practical classes: 4h

Self study : 10h

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, prescription and main use criteria.
- the criteria for aligning and anatomically adjusting frames and the management of complaints.

Related activities:

PRACTICE 3: Recognition and manipulation of plastic and metal frames.

PRACTICE 4: Selection and anatomical adjustment of the suitable frame for the user.

ACP2: Virtual frame tester

CRA-2: Frame selection for the assigned user.

Frame selection criteria, taking into account facial type, prescription and main use.

Full-or-part-time: 17h

Theory classes: 2h

Practical classes: 4h

Self study : 11h

3. BEST LENS SELECTION

Description:

This topic works on:

- the concept of minimum diameter, and the different ways to calculate it.
- the implications of the patient's refraction on the choice of lens material and geometry.
- the spectacle conditions of use and the improvement with surface treatments of the lenses.
- the calculation and analysis of the weight and thickness distribution of beveled lenses.
- optimization of thickness and weight of prescriptions with positive lenses.
- the use of assistance programs for the selection of lenses and online catalogues.

Related activities:

PRACTICE 5: Lens use position and centering measurements.

PRACTICE 6: Selection of the optimal lenses for the user.

CRA-3: Selection of the optimal lenses for the assigned user.

Calculation of the minimum diameter of the lenses and the thickness distribution of the beveled lenses.

Full-or-part-time: 21h

Theory classes: 4h

Practical classes: 4h

Self study : 13h

4. MONOFOCAL SPECTACLES

Description:

This subject is divided in three parts, which consist in:

- 1- monocular effects of monofocal lenses: variation of the visual field, variation of the size of the image, effect of the vertex distance, effect of horizontal and vertical tilt of lenses.
- 2- binocular effects of monofocal lenses: aniseiconia induced by the prescription and isoeiconic lenses, repercussion in binocular alignment of the induced prismatic imbalances, centering of the lenses according to their main distance of use.
- 3- the effects of high power prescriptions: implications of compensation with spectacles in conditions of aphakia, high hypermetropia and high myopia, differential selection criteria for frames and lenses.

Related activities:

PRACTICE 7: Edging and assembling (in pairs) astigmatic lenses in a cellulose acetate frame

PRACTICE 8: Edging and assembling (individual) astigmatic lenses in a metal frame for a generic user.

PRACTICE 9: Edging and assembling astigmatic lenses for a real user, in any frame material.

PFAU-D: Partial delivery of the portfolio (dispensing practices: 1 to 6)

CRA-4: Monocular and binocular effects of the prescription, satisfaction questionnaire and final case report. Oral video presentation, with powerpoint support

EPT: Partial theory exam

Full-or-part-time: 47h

Theory classes: 8h

Practical classes: 8h

Self study : 31h

5. PRISMATIC LENS PRESCRIPTIONS

Description:

This topic is being worked on:

- the production methods of a prismatic prescription in both spherical and astigmatic lenses
- the information to the user of the associated perceptual changes
- the assembly, adjustment and adaptation of spectacles with prismatic prescriptions
- the analysis and solution of the problems of maladaptation of prisms

Related activities:

PRACTICE 11: Edging and assembling a prismatic prescription.

PFAU-CRA: Deliver real case adaptation

Full-or-part-time: 18h

Theory classes: 4h

Practical classes: 2h

Self study : 12h

6. MULTIFOCAL SPECTACLES

Description:

This topic is about:

- the need for multifocal prescription and the choice between the available optical systems.
- centering techniques and prismatic control in multifocal prescriptions.
- information to the user on the correct use of the prescription.
- the analysis and solution of maladaptation problems.

Related activities:

PRACTICE 12: Individual measurements and fitting of progressive glasses. Plotting cards.

Full-or-part-time: 12h

Theory classes: 4h

Practical classes: 2h

Self study : 6h

7. OCUPATIONAL SPECTACLE PRESCRIPTION

Description:

Topic of occupational prescriptions deals with:

- the design of the necessary multifocal visual solution.
- the study of the work environment.
- assessment of the range of clear vision.
- the necessary addition and power in the main point of view.
- the addition gradient.
- techniques for centering and adapting occupational prescriptions
- information to the user about the proper use of the prescription
- the analysis and solution of maladjustment problems.

Related activities:

CLASSROOM ACTIVITY: Selection of the multifocal visual solution: offer of the laboratories.

Full-or-part-time: 8h

Theory classes: 4h

Self study : 4h

8. SPECTACLE PERSONAL PROTECTIVE EQUIPMENTS (PPE)

Description:

Last topic of the course deals with:

- the need for eye protection against radiation and other external agents.
- the scope of eye protection and current regulations.
- the requirements, specifications and classification of eye sunscreens.
- the interpretation of spectral transmission curves of radiation protection filters according to the situation of use.
- The performance of the optical-optometrist in the selection and adaptation of the necessary personal protective equipment (PPE).

Related activities:

PRACTICE 13: Final practice exam

Full-or-part-time: 8h

Theory classes: 2h

Practical classes: 2h

Self study : 4h

ACTIVITIES

EUROPEAN DIPLOMA IN OPTOMETRY COMPETENCES

Description:

This module contributes to the European Diploma in Optometry competences indicated in the following link:

https://drive.google.com/drive/folders/1bwmHBsvkrGnY63DfXAnWZB_i0I2pXa-I?usp=drive_link

Full-or-part-time: 60h

Practical classes: 30h

Laboratory classes: 30h

GRADING SYSTEM

The FINAL QUALIFICATION (QF) of the subject is obtained from the WEIGHTING OF THE DIFFERENT ASSESSMENT ACTS, which are:

$$QF = 0.4 \cdot QT + 0.4 \cdot QP + 0.2 \cdot PFAU$$

THEORY QUALIFICATION (QT) 40%

20% EPT - PARTIAL EXAM

20% EFT - FINAL EXAM

PRACTICE QUALIFICATION (QP) 30%

25% LABORATORY SESSIONS (SL):

Daily rating (1 to 10): Preliminary task (TP) + Experimental procedure (PE)

15% FINAL LABORATORY EXAM (EFL)

EYEGLASSES ADAPTATION (PFAU) 20% (Must be kept for DIMU1)

Collection of practice reports (IP) in suggested format:

5% PFAU-D (dispensation): Practices 1 to 6

5% PFAU-M (assembly): Practices 7 to 12

10% CRA – REAL CASE OF ADAPTATION (CT3 / CT4 / CT5)

TRANSVERSAL COMPETENCES, associated with EYEGLASSES ADAPTATION, will be assessed based on the following activities:

CT3 - EFFECTIVE WRITTEN AND ORAL COMMUNICATION: Qualification obtained in the written report and the oral presentation of the REAL CASE OF ADAPTATION (CRA).

CT4 - TEAMWORK: Attitude and group dynamics in the preparation of the CRA and in the laboratory sessions (SL).

CT5 - SOLVENT USE OF INFORMATION RESOURCES: bibliographic references provided in the CRA, the SUBJECT PORTFOLIO (PFAU) and, eventually, in the EVALUABLE ACTIVITIES of bibliographic search and critical analysis of scientific articles that may be considered.

THE COMPETENCES of the EUROPEAN DIPLOMA corresponding to EYEGLASSES ADAPTATION will be considered achieved if the final grade of the subject is equal to or higher than 5.

The REASSESSMENT of the subject will consist of a single THEORETICAL EXAMINATION. The grade obtained in this test will be the EYEGLASSES ADAPTATION GLOBAL GRADE.

EXAMINATION RULES.

To obtain THEORY qualification (QT) you must bring to the partial and final exams (EPT and EFT) the necessary CALCULATION and DRAWING MATERIAL, which is indicated in class: calculator, ruler and drawing material to achieve a optimal presentation of layouts and graphics.

It is necessary to write legibly, and it is highly recommended to use erasable pens or tippex, to avoid mistakes and presentation defects, which penalize the qualification.

To obtain the rating for ASSESSABLE ACTIVITIES:

CRA1-2-3-4

PFAU-D

PFAU-M

they must be handed in ACCORDING TO THE DIRECTIONS indicated on the ATENEA Virtual Campus, IN THE FORMAT AND BY THE DEADLINE. Late deliveries will receive a numerical rating of zero.

To obtain the PRACTICE (QP) qualification you must ATTEND 100% of the laboratory sessions. If you cannot attend, you must:

- Notify the practice teacher before starting the corresponding session.

- Justify the absence with an official document.

If these requirements are not met, the numerical grade for the lab session will be zero

To take the FINAL LABORATORY EXAMINATION (EFL) you must bring the necessary individual material (ruler, marker, calculator and tippex).

To obtain the portfolio qualification (PFAU) it must be submitted in ELECTRONIC FORMAT and by the DEADLINE indicated, at the link enabled on the ATENEA Virtual Campus.

Portfolios submitted late will receive a numerical grade of zero.

In case of partial or total copying in any of the evaluations of the subject, the provisions of the Academic Regulations for undergraduate and master's studies of the UPC will apply:

"Irregular actions that can lead to a significant variation in the qualification of one or more students constitute a fraudulent performance of an evaluation act. This action entails the descriptive qualification of suspension and a numerical grade of 0 for the evaluation act and for the subject, without prejudice to the disciplinary process that may arise as a result of the acts carried out.

If the student considers the decision to be incorrect, he or she can file a complaint with the director or the dean of the educational center and, if the answer does not satisfy him or her, he or she can file an appeal with the rector.

The total or partial reproduction of academic or research works, or their use for any other purpose, must have the explicit authorization of the authors.

It is up to the director or the dean of the teaching center to resolve allegations about aspects not included in the regulations."

BIBLIOGRAPHY

Basic:

- Caum Aregay, Jesús [et al.]. Tecnología óptica: lentes oftálmicas, diseño y adaptación [on line]. Barcelona: Edicions UPC, 2001 [Consultation: 24/07/2024]. 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 [on line]. 2nd ed. Boston: Butterworth Heinemann, 1996 [Consultation: 18/06/2024]. Available on: <https://www-sciencedirect-com.recursos.biblioteca.upc.edu/book/9780409900606/clinical-optics>. 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://optcampus.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.

RESOURCES

Other resources:

Assistance programs for the selection of ophthalmic lenses:

- PRATS ON-LINE (PRATS ophthalmic lens selection program)

Spectacles 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