



Course guide

370803 - BVIREH - (Ang) Baixa Visió i Rehabilitació Visual

Last modified: 18/12/2023

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

Degree: MASTER'S DEGREE IN OPTOMETRY AND VISION SCIENCES (Syllabus 2022). (Compulsory subject).

Academic year: 2023 **ECTS Credits:** 3.5 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Lluís Pérez Mañà (<https://futur.upc.edu/LuisPerezMana>)
Bernat Sunyer Grau (<https://futur.upc.edu/BernatSunyerGrau>)

Others: Lluís Pérez Mañà (<https://futur.upc.edu/LuisPerezMana>)
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REQUIREMENTS

Previous training in examination, optical aids and visual rehabilitation for patients with low vision

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Transversal:

M-CT4. (ENG) Uso solvente de los recursos de información. Gestionar la adquisición, la estructuración, el análisis y la visualización de datos e información en el ámbito de especialidad y valorar de forma crítica los resultados de dicha gestión.

Basic:

CB10. (ENG) Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.

TEACHING METHODOLOGY

- Participatory expository class of theoretical and practical contents.
- Study of real cases and role-playing games
- Practical seminars
- Reading of didactic material, texts and articles related to the contents of the subject.
- Resolution of doubts through the Atenea virtual campus.

LEARNING OBJECTIVES OF THE SUBJECT

- Know the different parts of which the optometric examination is made up of a patient with visual impairment.
- Know the different parts of which the optometric examination is made up of a patient with visual impairment.- Know how to train typhotechnology and rehabilitation techniques in consultation with patients with visual disabilities.
- Know how to apply rehabilitation techniques for activities of daily living, mobility and orientation in patients with visual impairment.



STUDY LOAD

Type	Hours	Percentage
Hours medium group	28,0	32.00
Self study	59,5	68.00

Total learning time: 87.5 h

CONTENTS

Unit 1. Tiflotecnología (Technology in visual impairment)

Description:

- 1.1. Electronic magnifiers (Types, Parameters)
- 1.2. Computer (Operating systems, Accessibility adaptations, Specific programs)
- 1.3. Smartphones and Tablets (Operating Systems, Accessibility Adaptations, Specific Programs)
- 1.4. Applications based on operating systems (Magnifiers, Recognition, Readers, Health, Payments, Others...).
- 1.5. Aids based on artificial intelligence, augmented reality and virtual reality (BielGlasses, Retiplus, Orcam, etc...)
- 1.6. Clinical cases

Specific objectives:

That the student knows, learns to drive and learns to teach various technological systems that help the visually impaired in their activities.

Related activities:

Activity 1. Creation of an instruction guide for handling the different technological aids

Related competencies :

M-CT4. (ENG) Uso solvente de los recursos de información. Gestionar la adquisición, la estructuración, el análisis y la visualización de datos e información en el ámbito de especialidad y valorar de forma crítica los resultados de dicha gestión.

CB10. (ENG) Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.

Full-or-part-time: 22h

Laboratory classes: 7h

Self study : 15h



Unit 2. Activities of Daily Living (ADL)

Description:

- 2.1. AVD and specific surveys
- 2.2. General ADL learning protocol
- 2.3. Markings
- 2.4. Development of AVD techniques
- 2.5. Clinical cases

Specific objectives:

Know how to apply rehabilitation techniques for activities of daily living, in patients with visual impairment.

Related activities:

Activity 2. Make a video recording of the protocol and instructions, to a person with visual impairment (simulated or not), of an AVD.
video editing

Related competencies :

M-CT4. (ENG) Uso solvente de los recursos de información. Gestionar la adquisición, la estructuración, el análisis y la visualización de datos e información en el ámbito de especialidad y valorar de forma crítica los resultados de dicha gestión.
CB10. (ENG) Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.

Full-or-part-time: 22h

Laboratory classes: 7h

Self study : 15h

Unit 3. Orientation and Mobility (OyM)

Description:

- 3.1 Indoor orientation and mobility techniques, sighted guide technique, learning to pick up objects from the ground together with protection techniques
- 3.2 Orientation and mobility techniques indoors with a guide stick, history of the white cane, going up and down stairs
- 3.3 Outdoor orientation and mobility techniques with a guide stick, location of traffic lights, adapted control, explanation of the environment surrounding the patient
- 3.4 Outdoor orientation and mobility techniques with ultrasound cane or other devices, Wewalk cane, Rango cane and Buzzclip
- 3.5 The guide dog
- 3.6 Collection of information, multidisciplinary work and associations

Specific objectives:

Know how to apply rehabilitation techniques in orientation and mobility and in patients with visual impairment affected by peripheral visual field defects

Related activities:

Activity 3. Guide and be guided + creation of a guided route

Related competencies :

M-CT4. (ENG) Uso solvente de los recursos de información. Gestionar la adquisición, la estructuración, el análisis y la visualización de datos e información en el ámbito de especialidad y valorar de forma crítica los resultados de dicha gestión.
CB10. (ENG) Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.

Full-or-part-time: 23h 40m

Laboratory classes: 7h

Self study : 16h 40m



Unit 4. Optometric evaluation of the patient with visual impairment

Description:

- 4.1 Preliminary aspects in visual impairment
- 4.2 Optometric evaluation in the examination of the patient with visual impairment
- 4.3 Calculation of increases
- 4.4 Optical and non-optical aids

Specific objectives:

In this section, the preliminary aspects of the examination of a patient with visual impairment will be recalled: measurement of visual acuity, tests and specific nomenclatures, assessment of the visual field, contrast sensitivity and the calculation of magnifications.

As well as the optical aids in distant vision: telescopes and the aids in near vision: magnifying glasses, microscopes, telemicroscopes. Non-optical aids such as filters and lighting systems.

In addition, the relationship between the different pathologies and the affectation that occurs in the different structures of the visual system and its functional affectation will be explained.

Related competencies :

M-CT4. (ENG) Uso solvente de los recursos de información. Gestionar la adquisición, la estructuración, el análisis y la visualización de datos e información en el ámbito de especialidad y valorar de forma crítica los resultados de dicha gestión.

CB10. (ENG) Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.

Full-or-part-time: 19h 50m

Laboratory classes: 7h

Self study : 12h 50m



ACTIVITIES

Activity 1. Creation of a guide of instructions for handling the different technological aids

Description:

The various systems to work on in the guide will be indicated and students in pairs, in the middle of the course, must deliver a document with the description of instructions for the various systems.

Description: The various systems to be worked on in the guide will be indicated and the students must submit a document with the description of instructions for the various systems. Both the content and references as well as the form (format) of the document will be valued

Specific objectives: The creation of a useful document that reflects the accessibility instructions of various technological systems.
Enhance teamwork

As an example you can view this tutorial of a program: <https://www.youtube.com/watch?v=DXr5SqFrfrc> in video or in writing
<https://www.compartolid.es/jaws-internet/>

Specific objectives:

The creation of a useful document that reflects the accessibility instructions of various technological systems.
Enhance teamwork

Material:

Material: Computer operating systems (Windows and MAC) and telephones (Android and Apple) Apps (choose 1 application and describe its use)

Delivery:

Delivery: Both the content and references as well as the form (format) of the document will be valued, it can be written or in video format

Value: 15%

Related competencies :

CB10. (ENG) Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.

Full-or-part-time: 11h 40m

Self study: 11h 40m



Activity 2. Make a video of an AVD.

Description:

The student will select a daily life activity of his choice and create an appropriate instruction protocol for a person with visual impairment (simulated or not). To develop the work you must first write an instruction script and then record the AVS and edit the video with the appropriate explanations.

Description: The student will select the activity, create the protocol of instructions suitable for a person with a visual impairment (simulated or not) and perform and edit the Video Editing Specific objectives: That the students analyze the steps to follow before instructions in AVD

Material: Material corresponding to AVD Video Editing program OBS or similar 200MB

Specific objectives:

That students analyze the steps to follow before instructions in AVD

For students to obtain a background of video files with action protocols

Material:

Material corresponding to AVD
video

Editing program Filmora or similar

Delivery:

Halfway through the course, the student will deliver the video file and this will form part of the evaluation.

Valuation: 15%

Related competencies :

M-CT4. (ENG) Uso solvente de los recursos de información. Gestionar la adquisición, la estructuración, el análisis y la visualización de datos e información en el ámbito de especialidad y valorar de forma crítica los resultados de dicha gestión.

CB10. (ENG) Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.

Full-or-part-time: 12h 40m

Theory classes: 1h

Self study: 11h 40m



Activity 3. Guide and be guided + creation of a guided route Assessment

Description:

Guide and be guided activity and creation of a guided route.

Students must pair up and one of them must simulate blindness conditions.

The evaluation will consist of guiding and being guided through a circuit.

Each student will carry out the activity of leading and being led.

The activity will be evaluated according to the ability to be able to correctly guide a student (who will be with his eyes closed simulating absolute blindness with a white cane) through the appropriate instructions and techniques through 5 minutes in a random route selected by the teacher.

As well as correctly using the mobility stick

The activity of guiding and being guided will have a value of 10%

Creation of a guided route: the student must describe in writing in detail, and describing the different parts of a route to follow to go from point A to point B, through the appropriate indications to a person using the mobility stick

Valuation of 15%.

Specific objectives:

That the student tests the knowledge acquired about orientation and mobility

Material:

White Cane provided by the CUV

Visualization of a real circuit

Delivery:

Through the Atenea platform and through a practical exam

Related competencies :

M-CT4. (ENG) Uso solvente de los recursos de información. Gestionar la adquisición, la estructuración, el análisis y la visualización de datos e información en el ámbito de especialidad y valorar de forma crítica los resultados de dicha gestión.

CB10. (ENG) Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.

Full-or-part-time: 11h 40m

Self study: 11h 40m

name english**Related competencies :**

CB10. (ENG) Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.

Full-or-part-time: 2h

Theory classes: 2h

GRADING SYSTEM

- Activity 1. Script of Tiflitécnológicas instructions Assessment 15%
- Activity 2. Video file of instructions in AVD Assessment 15%
- Activity 3. Guide and be guided + creation of a guided route Assessment 10% + 15%
- Activity 4. Written test of individual knowledge control. It will be carried out at the end of the subject and all the knowledge of the subject of low vision and visual rehabilitation will enter Valuation: 45%

In case of failing the subject, you will have the option of recovering it through a reassessment exam that will be carried out according to the general conditions established for each course in the Academic Regulations for Undergraduate and Master's Studies of the UPC (NAGRAMA) and the particular ones established by the FOOT with the following conditions:

- 1.- It will only be possible to submit for re-evaluation if the overall grade obtained from the subject is equal to or greater than 3
- 2.- Students with a No Present (NP) grade cannot take advantage of the reassessment option.
- 3.- The reevaluation will consist of a written exam (100%)

If the reassessment exam is passed (with a grade equal to or greater than 5), the final grade for the subject will always be 5. Otherwise, the highest grade between that obtained in the previous assessment and that of the reassessment will be maintained.

EXAMINATION RULES.

To pass the subject it is mandatory to attend at least 90% of the face-to-face classes (being able to miss 1 of the sessions with justification)

The delivery of the course activities will be carried out in digital format through links in the Atenea Virtual Campus.

In case of failing the assignment, the student will have the option of recovering it through a re-evaluation exam that will be carried out according to the general conditions established each year by the Academic Regulations of the Undergraduate and Master Studies of the UPC (NAGRAMA) and the particular ones established by the FOOT with the following conditions:

1. Només may be submitted to the re-evaluation if the overall grade obtained from the assignment is equal to or higher than 3.
2. Students with a grade of Not Presented (NP) will not be able to access the reevaluation option.
3. The re-evaluation will consist of a written exam (100%).

If the re-evaluation exam is passed (with a grade equal to or higher than 5), the final grade of the course will always be 5. Otherwise, the highest grade obtained in the previous evaluation and the re-evaluation will be maintained.

The 14 sessions have a compulsory character of presence, being able to miss 1 of the sessions with justification.

In case of partial or total copy of any of the evaluations of the course, the provisions of the General Academic Regulations of the UPC will be applied:

Irregular actions that may lead to a significant variation in the grade of one or more students constitute a fraudulent performance of an act of evaluation. This action entails the descriptive grade of suspense and numerical grade of 0 of the act of evaluation and assignment, prejudicial sense of the disciplinary procedure that may arise as a result of the acts performed.

If the student considers the decision to be incorrect, he/she may lodge a complaint with a body addressed to the director or the dean of the educational institution and, if he/she is not satisfied with the response, he/she may lodge 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 the responsibility of the director or dean of the educational institution to revoke licenses for aspects not included in the regulations."

BIBLIOGRAPHY

Basic:

- Basterrechea Estella, María Pilar. Discapacidad visual y autonomía personal: enfoque práctico de la rehabilitación [on line]. Madrid: ONCE, 2011 [Consultation: 30/01/2023]. Available on: <http://hdl.handle.net/11181/3279>. ISBN 9788448402778.
- Abengózar Vela, Antonio [et al.]. Manual de baja visión y rehabilitación visual. Madrid: Médica Panamericana, 2015. ISBN 9878498358490.

Complementary:

- Hooper, Phil [et al.]. "Age-related macular degeneration and low-vision rehabilitation: a systematic review". Canadian Journal of Ophthalmology [on line]. 2008, vol. 43, núm. 2, p. 180-187 [Consultation: 30/01/2023]. Available on: <https://www-sciencedirect-com.recursos.biblioteca.upc.edu/science/article/pii/S0008418208801408>.- Markowitz, Samuel N. "State-



of-the-art: low vision rehabilitation". Canadian Journal of Ophthalmology [on line]. 2016, vol. 51, núm. 2, p. 59-66 [Consultation: 30/01/2023]. Available on: <https://www.sciencedirect-com.recursos.biblioteca.upc.edu/science/article/pii/S0008418215004767>.- Rubin, Gary S. "Vision rehabilitation for patients with age-related macular degeneration". Eye [on line]. 2001, vol. 15, núm. 3, p. 430-435 [Consultation: 30/01/2023]. Available on: <https://doi.org/10.1038/eye.2001.148>.- Trauzettel-Klosinski, Susanne. "Current methods of visual rehabilitation". Deutsches Ärzteblatt International [on line]. 2011, vol. 108, núm. 51-52, p. 871-878 [Consultation: 30/01/2023]. Available on: <http://doi.org/10.3238/arztebl.2011.0871>.