Course guide
370051 - VISIOESP - Sportsvision: Eye-Tracking Application

Last modified: 16/07/2025

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). (Optional subject).

Academic year: 2025 **ECTS Credits:** 3.0 **Languages:** Catalan, English

LECTURER

Coordinating lecturer: Quevedo Junyent, Luisa Jesus

Others: Viñuela Navarro, Valldeflors

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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 informacion resources. To manage data and technical and scientific information adquisition, organization, analysis and visualization and to provide a critical appraisal of the results of this management
CT7. Foreign language. Demonstrate knowledge of a foreign language, preferably English, at an oral and written level that is consistent with graduates' future needs.

Basic:
CB2-OPT. (ENG) Que los estudiantes sepan aplicar sus conocimientos a su trabajo o vocación de una forma profesional y osean las competencias que suelen demostrarse por medio de la elaboración y defensa de argumentos y la resolución de problemas dentro de su área de estudio
CB3-OPT. (ENG) Que los estudiantes tengan la capacidad de reunir e interpretar datos relevantes (normalmente dentro de su área de estudio) para emitir juicios que incluyan una reflexión sobre temas relevantes de índole social, científica o ética
CB4-OPT. (ENG) Que los estudiantes puedan transmitir información, ideas, problemas y soluciones a un público tanto especializado como no especializado

TEACHING METHODOLOGY

- Participatory expository class of theoretical and practical content.
- Active methodologies in the classroom (flipped class, project-based learning (PBL), case studies, cooperative learning).
- Practical resolution class, with the participation of students, of practical cases and/or exercises related to the contents of the subject.
– Laboratory practices.
– Reading didactic material, texts and articles related to the contents of the subject.
- Tutorials

LEARNING OBJECTIVES OF THE SUBJECT

1. Provide the student with the techniques and strategies to evaluate the visual skills involved in the different sports disciplines, find the best system of optical neutralization and eye protection, and design a specific and integrated visual training program.
2.Provide the student with an in-depth understanding of the different eye movements and their importance in sport, as well as the techniques, strategies and tools for their assessment and training in sporting areas.

STUDY LOAD

Type	Hours	Percentage
Hours medium group	22,5	30.00
Self study	45,0	60.00
Hours small group	7,5	10.00

Total learning time: 75 h

CONTENTS

1. Introduction to Vision and Sport

Description:
Definition
Areas of action: eye protection, optical neutralization, assessment of visual skills, visual training
History and current situation
problematic
Discuss scientific evidence

Full-or-part-time: 2h 40m
Theory classes: 2h 40m

2. Visuo-cognitive skills related to sport

Description:
Visual skills: definition and evaluation
New technologies.
Basic cognitive processes
Hardware vs Software
Discuss scientific evidence

Full-or-part-time: 2h
Theory classes: 2h

3. Visual training in sport

Description:
Theory of visual training in sport
Integrative methodology
Visual training programs for various disciplines

Full-or-part-time: 3h
Theory classes: 3h

4. Ocular motility: concepts and characteristics

Description:
a. Saccades, tracking, fixation and vergences
b. Development of ocular motility
c. The role of eye motility in sport
d. Subjective clinical techniques for the evaluation of ocular motility in practice

Full-or-part-time: 10h
Theory classes: 4h
Practical classes: 2h
Self study : 4h

5. Application of technology in ocular motility

Description:
a. History and development of different technologies for the evaluation and training of ocular motility
b. Basic concepts and principles on the application of technology to eye motility assessment and training
c. Implementation and application of technology in sport

Full-or-part-time: 6h
Theory classes: 2h
Self study : 4h

6. Eye motility recording technology

Description:
a. Basic concepts and principles of eye motility recording
b. Current eye motility recording systems
c. Implementation of eye motility recording systems in sport
d. Methodology for studies and procedures for recording eye motility
e. Analyzes of eye motility and binocularity parameters obtained using sport-related eye motility recording

Full-or-part-time: 8h
Theory classes: 2h
Practical classes: 2h
Self study : 4h

7. Other considerations of the use of technologies in the sports field

Description:
a. News, debate and scientific evidence

Full-or-part-time: 28h
Guided activities: 3h
Self study : 25h

ACTIVITIES

name english

Full-or-part-time: 2h
Laboratory classes: 2h

name english

Full-or-part-time: 5h
Laboratory classes: 5h

name english

Full-or-part-time: 2h
Practical classes: 2h

GRADING SYSTEM

- Tutored work: Design of an integrated visual training program for a sports discipline. (50%)
-Group work in seminars for debate (20%)
-Group presentation of an eye tracking application or eye motility training in a sports activity based on a published article. (30%)

BIBLIOGRAPHY

Basic:
- Rodríguez, V; Gallego, I; Zarco, D. Visión y deporte. Barcelona: Glosa, 2010. ISBN 9788474294934.
- Carter, Benjamin T.; Luke, Steven G. "Best practices in eye tracking research". International journal of psychophysiology [on line]. 2020, vol. 155, p. 49-62 [Consultation: 17/09/2024]. Available on: https://www-sciencedirect-com.recursos.biblioteca.upc.edu/science/article/pii/S0167876020301458.- Appelbaum, L. Gregory; Erickson, Graham. "Sports vision training: a review of the state-of-the art in digital training techniques". International review of sport and exercise psychology [on line]. 2016, vol. 11, núm. 1, p. 160-189 [Consultation: 17/09/2024]. Available on: https://www-tandfonline-com.recursos.biblioteca.upc.edu/doi/full/10.1080/1750984X.2016.1266376.

Complementary:
- Erickson, Graham B. Sports vision: vision care for the enhancement of sports performance. 2nd ed. Sant Louis, Missouri: Elsevier, 2022. ISBN 9780323755436.