Course guide
370011 - FIBI - Physiology and Biochemistry

Last modified: 20/03/2024

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

LECTURER

Coordinating lecturer: Laura Dyson

Others: Laura Dyson

PRIOR SKILLS

The knowledge acquired in the subjects of Anatomy and Histology of the Head and Anatomy of the Visual System,
as well as Chemistry for Vision Sciences, all of them taught during the first year of the Degree in Optics and Optometry,
They will be the essential basis for understanding the general physiological and biochemical characteristics and those related to vision and ocular annexes.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CE02. Determine the functions of systems in the human body. Demonstrate knowledge of the principles and foundations of the biological processes involved in the normal functioning of the visual system. Recognise, with macroscopic and microscopic methods, the morphology and structure of the tissues, organs and systems in the human body. Demonstrate knowledge of and describe, macroscopically and microscopically, the structures that make up the visual system and ocular adnexa. Demonstrate knowledge of the structure of the cell, embryonic development and organogenesis. Describe the development of the visual system. Demonstrate knowledge of the microorganisms involved in visual system disorders. Demonstrate knowledge of the properties and functions of the various parts that make up the visual system.
CE05. (ENG) The ability to understand the structure of matter, the chemical processes of solutions and the structure, properties and reactivity of organic compounds. The ability to understand the composition and structure of the molecules that make up living beings. The ability to understand the transformation of certain biomolecules into others. The ability to study the molecular basis of the storage and expression of biological information. The ability to apply biochemical knowledge to the eye and the process of vision.

CE07. (ENG) The ability to understand and manage basic laboratory materials and techniques.
CE13. Understand the factors that limit retinal image quality. Demonstrate knowledge of the spatial and temporal aspects of vision. Carry out psychophysical tests to determine levels of visual perception. Demonstrate knowledge of the functioning of the retina as a receptor of radiant energy. Demonstrate knowledge of the basic models of vision of colour, shape and movement. Demonstrate knowledge of age-related changes in perceptual processes. Measure and interpret psychophysical data obtained from an assessment of visual perception.

Generical:
CG11. Locate new information and interpret it in context.

Transversal:
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.
CT7. Foreign language. Demonstrate knowledge of a foreign language, preferably English, at an oral and written level that is consistent with graduates' future needs.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

- Understanding the physiological and biochemical processes of the human body, as well as the transformations of biomolecules into others.
- Understanding the biochemical processes that occur in the eye and vision.

STUDY LOAD

Type	Hours	Percentage
Hours medium group	45,0	30.00
Self study	90,0	60.00
Hours small group	15,0	10.00

Total learning time: 150 h

CONTENTS

title english

Description:
content english

Full-or-part-time: 5h
Practical classes: 2h
Self study : 3h

title english

Description:
content english

Full-or-part-time: 47h 30m
Practical classes: 12h
Laboratory classes: 7h
Self study : 28h 30m

title english

Description:
content english

Full-or-part-time: 60h
Practical classes: 20h
Laboratory classes: 4h
Self study : 36h

title english

Description:
content english

Full-or-part-time: 37h 30m
Practical classes: 11h
Laboratory classes: 4h
Self study : 22h 30m

ACTIVITIES

name english

Full-or-part-time: 13h 45m
Laboratory classes: 5h 30m
Self study: 8h 15m

name english

Full-or-part-time: 5h
Laboratory classes: 2h
Self study: 3h

name english

Full-or-part-time: 5h
Laboratory classes: 2h
Self study: 3h

name english

Full-or-part-time: 3h 45m
Laboratory classes: 1h 30m
Self study: 2h 15m

name english

Full-or-part-time: 5h
Laboratory classes: 2h
Self study: 3h

name english

Full-or-part-time: 5h
Laboratory classes: 2h
Self study: 3h

name english

Full-or-part-time: 10h
Laboratory classes: 10h

name english

Full-or-part-time: 1h
Laboratory classes: 1h

name english

Full-or-part-time: 6h
Practical classes: 6h

name english

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

name english

Full-or-part-time: 1h
Practical classes: 1h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:
- Levin, Leonard A. [et al.]. Adler's physiology of the eye. 11th edition. Edinburgh [etc.]: Saunders Elsevier, cop. 2011. ISBN 9780323057141.
- Forrester John V. [et al.]. The eye: basic sciences in practice. 4th edition. Edinburg [etc.]: Elsevier, 2016. ISBN 9780702055546.
- Nemeth, S.; Ledford, J.K.; Lens, A. Ocular anatomy and physiology [on line]. 2nd ed. Thorofare, New Jersey: SLACK, 2008 [Consultation: 13/05/2022]. Available on: https://web-p-ebscohost-com.recursos.biblioteca.upc.edu/ehost/ebookviewer/ebook?sid=553832a8-071c-4fd1-a276-b48416b4282e%40redis&vid=0&format=EB. ISBN 9781556427923.
- Nelson David L.; Cox, Michael M. Lehninger principios de bioquímica. 7ª edición. Barcelona: Omega, 2018. ISBN 9788428216678.
- Kandel Eric R.; Schwartz, James H.; Jessell, Thomas M. Principios de neurociencia. 4ª edición. Madrid: McGraw Hill Interamericana, 2001. ISBN 8448603117.
- Hall, John E.; Guyton, Arthur C. Tratado de fisiología médica. 13ª edición. Barcelona: Elsevier, 2016. ISBN 9788491130246.