

# Course guide

## 370043 - ERGON - Visual Ergonomics

**Last modified:** 28/06/2023

**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:** 2023    **ECTS Credits:** 3.0    **Languages:** Catalan, Spanish

### LECTURER

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**Coordinating lecturer:** José Luis Alvarez Muñoz (<https://futur.upc.edu/JoseLuisAlvarezMunoz>)

**Others:**

### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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#### Generical:

CG1. Demonstrate knowledge of, design and apply prevention and maintenance programmes relating to the population's visual health.

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

CG11. Locate new information and interpret it in context.

CG12. (ENG) The ability to understand the general structure of optometry and its connection to other specific disciplines and other complementary ones.

CG16. Participate effectively in both single-discipline and multidisciplinary work groups on projects related to optometry.

#### Transversal:

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

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.

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

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

#### Basic:

CB2-OPT. (ENG) Que los estudiantes sepan aplicar sus conocimientos a su trabajo o vocación de una forma profesional y oseen 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

CB5-OPT. (ENG) Que los estudiantes hayan desarrollado aquellas habilidades de aprendizaje necesarias para emprender estudios posteriores con un alto grado de autonomía

## TEACHING METHODOLOGY

MD1 - Participatory expository class of theoretical and practical content.

MD3 - Practical resolution class, with the participation of students, of practical cases and/or exercises related to the contents of the subject.

MD4 - Laboratory practices.

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

MD6 - Realization of problems, exercises, assignments and resolution of doubts through the Atenea virtual campus.

## LEARNING OBJECTIVES OF THE SUBJECT

- Understanding the multidisciplinary of ergonomics.
- Knowing the different aspects that must be studied to carry out a complete ergonomic analysis.
- Understanding the role played by visual aspects in ergonomics.
- Knowing the current national and international regulations in relation to visual ergonomics.
- Knowing the design bases of all types of visual information devices.
- Understanding the physical characteristics and operation of all types of light sources on the market.
- Knowing the parameters and criteria to properly illuminate a specific space, depending on the activity that must be carried out.
- Studying the effects of light radiation on the human body.
- Differentiating and quantifying the different types of glare to which our visual system may be exposed.
- Understanding the importance of mesopic photometry and analyzing different calculation models.
- Learning the bases for calculating a lighting installation (number and distribution of luminaires necessary to illuminate a specific space).
- Knowing the operation and benefits of all types of data display screens existing in the market, as well as the rules and recommendations for their efficient use by people.
- Knowing what negative effects an inappropriate use of PVD has on the human visual system.
- Knowing the different systems of ocular protection, and the levels of protection that they offer to the user.
- Properly interpreting current European regulations on maximum levels of exposure to incoherent and coherent optical radiation.
- Knowing the current regulations in relation to visual ergonomics in driving.
- Knowing the current regulations in relation to visual ergonomics in school activity.

## STUDY LOAD

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

**Total learning time:** 75 h

## CONTENTS

### title english

**Description:**

content english

**Full-or-part-time:** 6h

Practical classes: 1h 30m

Laboratory classes: 1h 30m

Self study : 3h



**title english**

**Description:**

content english

**Full-or-part-time:** 3h 30m

Practical classes: 1h 30m

Self study : 2h

**title english**

**Description:**

content english

**Full-or-part-time:** 6h

Practical classes: 2h

Self study : 4h

**title english**

**Description:**

content english

**Full-or-part-time:** 7h 30m

Practical classes: 1h 30m

Laboratory classes: 2h

Self study : 4h

**title english**

**Description:**

content english

**Full-or-part-time:** 4h

Practical classes: 1h 30m

Self study : 2h 30m

**title english**

**Description:**

content english

**Full-or-part-time:** 10h 30m

Practical classes: 2h 30m

Laboratory classes: 2h

Self study : 6h



**title english**

**Description:**

content english

**Full-or-part-time:** 5h 30m

Practical classes: 1h 30m

Self study : 4h

**title english**

**Description:**

content english

**Full-or-part-time:** 6h

Practical classes: 2h

Self study : 4h

**title english**

**Description:**

content english

**Full-or-part-time:** 6h

Practical classes: 2h

Self study : 4h

**title english**

**Description:**

content english

**Full-or-part-time:** 9h

Practical classes: 2h

Laboratory classes: 2h

Self study : 5h

**title english**

**Description:**

content english

**Full-or-part-time:** 4h

Practical classes: 1h

Self study : 3h



**title english**

**Description:**

content english

**Full-or-part-time:** 4h

Practical classes: 2h

Self study : 2h

**title english**

**Description:**

content english

**Full-or-part-time:** 3h

Practical classes: 1h 30m

Self study : 1h 30m

## ACTIVITIES

**name english**

**Full-or-part-time:** 1h 30m

Laboratory classes: 1h 30m

**name english**

**Full-or-part-time:** 2h

Laboratory classes: 2h

**name english**

**Full-or-part-time:** 2h

Laboratory classes: 2h

**name english**

**Full-or-part-time:** 2h

Laboratory classes: 2h

**name english**

**Full-or-part-time:** 1h 30m

Practical classes: 1h 30m



**name english**

**Full-or-part-time:** 1h 30m

Practical classes: 1h 30m

**name english**

**Full-or-part-time:** 7h

Self study: 7h

**name english**

**Full-or-part-time:** 2h

Self study: 2h

## GRADING SYSTEM

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The final mark of the subject results from the weighted sum of the following partial marks:

$$FM = 0.35 \cdot CAT1 + 0.35 \cdot CAT2 + 0.1 \cdot CE + 0.2 \cdot PR$$

FM: final mark

CAT1: first continuous assessment test

CAT2: second continuous assessment test

CE: classroom exercises

PR: delivery of practice reports

Students who obtain a final mark of the subject equal to or higher than 3.0, may take a reassessment exam. In this case, the final mark of the subject will result from the weighted sum of the following partial marks:

$$FM = 0.8 \cdot PAT + 0.2 \cdot PAP$$

FM: final mark

TET: theory content assessment test

PET: practical content assessment test

In the case of re-evaluation, if the final mark is higher than 5.0, this will be equal to 5.0.

## BIBLIOGRAPHY

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**Basic:**

- Chartered Institution of Building Services Engineers. Code for lighting . Oxford : Butterworth-Heinemann, 2002. ISBN 9780750656375.
- The SLL Code for lighting. [London] : SLL, 2012. ISBN 9781906846213.
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- Anshel, Jeffrey. Visual ergonomics in the workplace . London : Taylor & Francis, cop. 1998. ISBN 0748406581.
- Dul, Jan; Weerdmeester, Bernard. Ergonomics for beginners. Secondd edition. London and New York: Taylor & Francis Inc, 2001. ISBN 0-7484-0825-8.
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