



Course guide

370012 - INSTRUMOPT - Optometrics Instruments

Last modified: 16/04/2024

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: Núria Tomas Corominas, TU
(<http://futur.upc.edu/NuriaTomasCorominas>)

Others: Alvarez Muñoz, José Luis TEU
(<https://futur.upc.edu/JoseLuisAlvarezMunoz>)

PRIOR SKILLS

Have solid knowledge of Geometric Optics, Instrumental Optics and Visual Optics
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DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

CE04. (ENG) The ability to understand the process of image formation and the properties of optical systems. The ability to understand aberrations in optical systems. The ability to understand radiometric and photometric fundamentals and laws.

CE07. (ENG) The ability to understand and manage basic laboratory materials and techniques.

CE09. (ENG) The ability to understand the principles, descriptions and characteristics of basic optical instruments and the instruments used in optometric and ophthalmic practice.

CE22. (ENG) Conèixer i aplicar ajudes òptiques i no òptiques per a la baixa visió.

Generical:

CG5. Give opinions and produce reports and expert reports when necessary.

CG6. Assess and incorporate the technological improvements necessary to properly carry out professional activities.

CG8. Plan and carry out research projects that contribute to the production of knowledge in the field of optometry and disseminate this scientific knowledge via the typical communication channels.

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

Transversal:

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

CT2. SUSTAINABILITY AND SOCIAL COMMITMENT: Being aware of and understanding the complexity of the economic and social phenomena typical of a welfare society, and being able to relate social welfare to globalisation and sustainability and to use technique, technology, economics and sustainability in a balanced and compatible manner.



TEACHING METHODOLOGY

MD1 - Participatory lecture class of theoretical and practical content

MD2 - Active methodologies in the classroom (project-based learning (PBL), case studies, role-playing games, cooperative learning, ...)

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

MD4 - Laboratory practices

LEARNING OBJECTIVES OF THE SUBJECT

Objectiu: conèixer els instruments òptics fonamentals , així com els instruments optomètrics

STUDY LOAD

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

Total learning time: 150 h

CONTENTS

title english

Description:

content english

Full-or-part-time: 10h

Practical classes: 2h

Laboratory classes: 2h

Self study : 6h

title english

Description:

content english

Full-or-part-time: 40h

Practical classes: 6h

Laboratory classes: 10h

Self study : 24h

title english

Description:

content english

Full-or-part-time: 15h

Practical classes: 2h

Laboratory classes: 4h

Self study : 9h



title english

Description:

content english

Full-or-part-time: 52h 30m

Practical classes: 13h

Laboratory classes: 8h

Self study : 31h 30m

title english

Description:

content english

Full-or-part-time: 22h 30m

Practical classes: 5h

Laboratory classes: 4h

Self study : 13h 30m

title english

Description:

content english

Full-or-part-time: 10h

Practical classes: 2h

Laboratory classes: 2h

Self study : 6h

ACTIVITIES

name english

Full-or-part-time: 50h

Laboratory classes: 50h

name english

Full-or-part-time: 25h

Laboratory classes: 10h

Self study: 15h

name english

Full-or-part-time: 10h

Laboratory classes: 4h

Self study: 6h



Europeana Diploma

Related competencies :

CE09. (ENG) The ability to understand the principles, descriptions and characteristics of basic optical instruments and the instruments used in optometric and ophthalmic practice.

Full-or-part-time: 1h

Guided activities: 1h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:

- Smith, George; Atchison, David A. The eye and visual optical instruments. Cambridge: Cambridge University Press, 1997. ISBN 0521478200.
- Kaschke, M.; Donnerhacke, K.H.; Stefan, M. Optical devices in ophthalmology and optometry: technology, design principles and clinical applications [on line]. Weinheim: Wiley-Vch, 2014 [Consultation: 20/02/2023]. Available on: <https://onlinelibrary-wiley-com.recursos.biblioteca.upc.edu/doi/book/10.1002/9783527648962>. ISBN 9783527410682.
- Henson, David B. Optometric instrumentation. 2nd edition. Oxford: Butterworth-Heinemann, 1996. ISBN 0750607270.
- Tomas, Núria; Arjona, Montserrat; Arasa, Josep. "Biomicroscopio ocular con lámpara de hendidura: sistema de iluminación". Ver y oír. 2007, vol. 24, p. 272-276.
- Arjona, Montserrat; Tomás, Núria; Arasa, Josep. "Biomicroscopio ocular con lámpara de hendidura: sistema de observación". Ver y oír. 2006, vol. 23, p. 414-420.
- Arjona, Montserrat; Tomàs, Núria; Arasa, Josep. "Frontofocómetro automático". Ver y oír. 2003, núm. 177, p. 428-435.
- Arjona, Montserrat; Tomàs, Núria; Arasa, Josep. "Principales fuentes de error en el uso del frontofocómetro de visión directa". Ver y oír. 2002, núm. 163, p. 179-185.
- Arjona, Montserrat; Tomàs, Núria; Arasa, Josep. "El queratómetro ¿Por qué hay tanta variedad?". Ver y oír. 2002, núm. 170, p. 758-768.
- Antó, J.; Tomás, N. Òptica instrumental. Alfaomega, 2003. ISBN 9789701502921.

Complementary:

- Arasa, J.; Arjona, M.; Tomàs, N. Instruments òptics i optomètrics: problemes. 2a edició. Barcelona: Edicions UPC, 1994. ISBN 847653423X.
- Martínez Corral, M. [et al.]. Instrumentos ópticos y optométricos: teoría y prácticas. València: Universitat de València, 1998. ISBN 8437034906.
- Millan, M.S.; Escofet, J.; Pérez, E. Óptica geométrica. Barcelona: Ariel, 2004. ISBN 9788434480643.