Last update: 10-07-2018

370702 - TÈCNIQUES - Techniques and Optometric Aspects of Eye Surgery

Coordinating unit: 370 - FOOT - Terrassa School of Optics and Optometry

Teaching unit: 731 - OO - Department of Optics and Optometry

Academic year: 2018

Degree: MASTER'S DEGREE IN OPTOMETRY AND VISION SCIENCES (Syllabus 2012). (Teaching unit Compulsory)

ECTS credits: 3 Teaching languages: Spanish, English

Teaching staff

Coordinator: - GENIS CARDONA TORRADEFLOT (http://futur.upc.edu/GenisCardonaTorradeflot)

Others: Genís Cardona (http://futur.upc.edu/GenisCardonaTorradeflot)
Fidel Vega (http://futur.upc.edu/FidelVegaLerin)
Eva García Parés (http://futur.upc.edu/EvaGarciaPares)

Degree competences to which the subject contributes

Transversal:

1. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.

Teaching methodology

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Learning objectives of the subject

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Study load

Total learning time: 74h	Hours large group:	0h	0.00%
	Hours medium group:	16h	21.62%
	Hours small group:	8h	10.81%
	Guided activities:	0h	0.00%
	Self study:	50h	67.57%

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Content

(ENG) -Topografia corneal

Learning time: 6h
Theory classes: 3h
Self study : 3h

Description:
In this section we will review the main concepts related to the measurement of corneal and anterior chamber parameters. We will discuss the main limitations of conventional keratometry, particularly in the determination of IOL power inpatients previously submitted to refractive surgery. Several topography techniques will be described, including Placido-based topographers and Scheimpflug imaging. Topography maps will be interpreted in health and disease (keratoconus, irregular astigmatism...).

(ENG) -Aberrometria corneal i ocular

Learning time: 6h
Theory classes: 3h
Self study : 3h

Description:
The foundamental concepts of ocular and corneal aberrometry will be discussed, with a description of the techniques (ray tracing and devices of the Hartman-Shack type). Zenike polynomials will be described as a mathematical method to determine aberrations. Aberrations will be discussed in health, including physiological changes with age, in pathological conditions, in contact lens fitting for orthokeratology and in refractive surgery.

(ENG) -Làsers a la cirurgia refractiva i ocular

Learning time: 4h
Theory classes: 2h
Self study : 2h

Description:
In this section we will discuss physical and optical properties of different type of lasers used in refractive and ocular surgery.

(ENG) -Exàmens optomètrics pre- i post-operatoris

Learning time: 17h
Theory classes: 7h
Practical classes: 3h
Self study : 7h

Description:
In this section we will address the various optometric tests that are commonly conducted before refractive and ocular surgery. In particular, we will discuss biometry (both ultrasound and optical coherence). Other aspects to be described are VA logMAR measurements, estereoacuity and contrast sensitivity in patients implanted with intraocular lenses, etc.

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(ENG) -Tècniques de cirurgia refractiva i ocular	Learning time: 15h Theory classes: 5h Guided activities: 5h Self study : 5h

Description:
In this section we will describe the different techniques for cataract and refractive surgery (LASIK, LASEK, PRK, EpiLASIK, etc.). Manual and femtosecond-based techniques will be compared. Finally, advantages and disadvantages of all techniques will be addressed and their main applications will be discussed.

(ENG) -Complicacions associades a la cirurgia refractiva i ocular	Learning time: 15h Theory classes: 5h Guided activities: 5h Self study : 5h

Description:
In this section, developed in a blended-learning modality, we will present the various complications associated with each of the refractive surgery techniques and we will address strategies for their management.

Intraocular lenses: formulae and design	Learning time: 4h Theory classes: 4h

Description:
In this section we will discuss the geometry, design and optical characteristics of the various types of monofocal and multifocal IOLs (refractive, diffractive, hybrid, apodized, aspheric, toric, etc.). Besides, the various parameters required to determine lens power will be described, as well as the formulas used to determine power and the most common errors leading to post-operative uncorrected refractive error.

Crosslinking	Learning time: 2h Theory classes: 2h

Description:
This section will examine the various approaches for the surgical management of keratoconus, including crosslinking and intrastromal segment implantation.

Qualification system

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Bibliography

Basic:

Olsen, T. "Calculation of intraocular lens power: a review". Acta ophthalmolologica scandinavica [on line]. 2007, vol. 85, issue 5, p.472-485 [Consultation: 13/12/2016]. Available on: <http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1755-3768>.

Taneri, S.; Weisberg, M.; Azar, D.T. "Surface ablation techniques". Journal of cataract & refractive surgery [on line]. 2011, vol. 37, issue 2, p.392-408 [Consultation: 13/12/2016]. Available on: <http://www.sciencedirect.com/science/journal/08863350>.

McKernan, A.L.; O'Dwyer, V.; Mannion, L.S. "The influence of soft contact lens wear and two weeks cessation of lens wear on corneal curvature". Contact lens & anterior eye [on line]. 2014, vol. 37, issue 1, p.31-37 [Consultation: 13/12/2016]. Available on: <http://www.sciencedirect.com/science/journal/13670484>.

McMonnies, C.W. "Assessing corneal hysteresis using the ocular response analyzer". Optometry and vision science [on line]. 2012, vol. 89, issue 3, p. E343-E349 [Consultation: 13/12/2016]. Available on: <http://journals.lww.com/optvissci/pages/default.aspx>.

Castillo, A. [et al.]. "Principles and clinical applications of ray-tracing aberrometry (Part II)". Journal of emmetropia [on line]. 2012, vol. 3, issue 3, p.157-165 [Consultation: 13/12/2016]. Available on: <http://www.journalofemmetropia.org/2171-4703/v3n3/v3-3-08.php>.

Chang, David F. Mastering refractive IOLs: the art and science. Thorofare, NJ: Slack, 2008. ISBN 9781556428593.

Fine, I.H.; Packer, M.; Hoffman, R.S. Refractive lens surgery. Berlin: Springer, cop. 2005. ISBN 9783540227168.

Alió, J.; Azar, D.T. Management of complications in refractive surgery. [New York]: Springer, cop. 2008. ISBN 9783540375838.

Castillo, A. [et al.]. "Principles and clinical applications of ray-tracing aberrometry (Part I)". Journal of emmetropia [on line]. 2012, vol. 3, issue 2, p.96-110 [Consultation: 13/12/2016]. Available on: <http://www.journalofemmetropia.org/2171-4703/v3-2-07.php>.

Complementary:

Nagy Z. [et al.]. "Initial clinical evaluation of an intraocular femtosecond laser in cataract surgery". Journal of refractive surgery [on line]. 2009, vol. 25, issue 12, p.1053-1060 [Consultation: 13/12/2016]. Available on: <http://proquest.umi.com/pqdweb?RQT=318&pmid=45495&clientId=41459>.

Others resources:

Hyperlink

Newsletter de l'eTimes

Resource

Pubmed

Resource

ESCRS

Resource