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: 2019
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)
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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

Learning objectives of the subject

Study load

<table>
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<tr>
<th>Study load</th>
<th>Total Learning time: 74h</th>
<th>Hours large group:</th>
<th>Hours medium group:</th>
<th>Hours small group:</th>
<th>Guided activities:</th>
<th>Self study:</th>
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<tbody>
<tr>
<td></td>
<td>74h</td>
<td>0h</td>
<td>16h</td>
<td>8h</td>
<td>0h</td>
<td>50h</td>
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<td>10.81%</td>
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<td>Content</td>
<td>Learning time: 6h</td>
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| (ENG) - Topografia corneal | 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 in patients 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...).

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<th>Learning time: 6h</th>
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| (ENG) - Aberrometria corneal i ocular | Theory classes: 3h  
| | Self study : 3h |

**Description:**
The fundamental 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.

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<th>Learning time: 4h</th>
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| (ENG) - Làsers a la cirurgia refractiva i ocular | 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.

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<th>Learning time: 17h</th>
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| (ENG) - Exàmens optomètrics pre- i post-operatoris | 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, esterocuity and contrast sensitivity in patients implanted with intraocular lenses, etc.
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.

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

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

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

Basic:


Complementary:


Others resources:

Hyperlink

Newsletter de l’eTimes
Resource

Pubmed
Resource

ESCRS
Resource