Visual optics deal with the issues of how light propagates and forms images into the eye. Visual Optics have suffered a remarkable expansion in the last years due basically to the development of new sensors and techniques that rapidly provide accurate and complete descriptions of the eye's aberrations, and the demonstration that adaptive optics can provide better correction of the eye's aberrations than has previously been possible.

The course focuses on the basic and advanced topics covered by Visual Optics. It assumes a basic knowledge of optics (aberration theory) and Fourier Optics; many of the key background concepts are reviewed. Basic models for the optics of the eye are presented. In this context, refractive anomalies and accommodation are studied including the most important optical features of any type of correcting lenses ophthalmic, contact or intraocular. Visual performance, including Visual Acuity and Contrast Sensitivity measurements is also described. The most important part of the course is devoted to the study of the optical quality of the eye. Topics covered include aberrations, their measurement and correction using adaptive optics systems, retinal image quality and intraocular scatter measurement. Finally, the latest techniques to obtain high resolution retinal images are analyzed. Numerous examples and applications are described.

Objetivos de aprendizaje de la asignatura

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Contenidos


Competencias de la titulación a las que contribuye el contenido:


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Competencias de la titulación a las que contribuye el contenido:

**Retinal image quality measurement. Double pass technique. Intraocular scatter measurements. Applications: measurement of ocular optical quality.**

Competencias de la titulación a las que contribuye el contenido:

**Adaptive optics for vision. Principal components of an AO system. Wavefront correctors. Applications**

Competencias de la titulación a las que contribuye el contenido:

**High Resolution Retinal Imaging. Conventional imaging. Scanning Laser Imaging. OCT Ophthalmoscope**

Competencias de la titulación a las que contribuye el contenido:

**Future trends and applications**
Competencias de la titulación a las que contribuye el contenido:

Sistema de calificación

Exam
Homework (problems, selected papers reading, short presentation...)

Normas de realización de las actividades

The usual in University teaching

Bibliografía

Básica:

Complementaria: