



# Guía docente

## 32088 - AAP - Óptica Activa y Adaptativa

Última modificación: 13/05/2015

**Unidad responsable:** Escuela Técnica Superior de Ingeniería de Telecomunicación de Barcelona  
**Unidad que imparte:** 731 - OO - Departamento de Óptica y Optometría.

**Titulación:** DOCTORADO EN FOTÓNICA (Plan 2007). (Asignatura optativa).  
DOCTORADO EN INGENIERÍA ÓPTICA (Plan 2007). (Asignatura optativa).  
MÁSTER UNIVERSITARIO EN FOTÓNICA (Plan 2009). (Asignatura optativa).  
MÁSTER UNIVERSITARIO ERASMUS MUNDUS EN INGENIERÍA FOTÓNICA, NANOFOTÓNICA Y BIOFOTÓNICA (Plan 2010). (Asignatura optativa).

**Curso:** 2015      **Créditos ECTS:** 2.5      **Idiomas:** Inglés

### PROFESORADO

**Profesorado responsable:** Santiago Royo

**Otros:** Josep Arasa

### METODOLOGÍAS DOCENTES

Presencial Teaching + activities

### OBJETIVOS DE APRENDIZAJE DE LA ASIGNATURA

Novel instrumentation and applications are allowing the birth of a new generation of applications in optics and photonics. The possibility of changing classical passive lenses for active optical elements, and the capability of controlling them in real-time, yielding optical systems which adapt to dynamical situations, is the central issue of this course. We will review the sensors, active elements and configurations which make this different optics possible. The main technical applications already developed (in visual optics, laser beam optimization, metrology, etc) are reviewed.

### CONTENIDOS

(CAST) -Active and adaptive optics: an overview

(CAST) -Active optical elements

(CAST) -Description and compensation of wavefronts

(CAST) -Sensing the wavefronts: alternatives

(CAST) -Closing the loop: controlling the wavefront



(CAST) -Active and adaptive optics applications

## SISTEMA DE CALIFICACIÓN

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Elaboration and defense of a short discussion on a theoretical or applied topic related to an active or adaptive optics application.

¿ Evaluation results will be based on students¿ interest and participation in discussions and forums; on the consistency of the discussion held on AO topics; and on the question and answer session following the presentation, with questions made either by the lecturer or by other students.

## NORMAS PARA LA REALIZACIÓN DE LAS PRUEBAS.

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The usual in University teaching

## BIBLIOGRAFÍA

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### Básica:

- Tyson, R.K. Principles of adaptive optics. 3rd ed. Boca Raton: CRC Press, 2011. ISBN 9781439808580.
- Wittrock, U. (ed.). Adaptive optics for industry and medicine: proceedings of the 4th international workshop, Münster, Germany, Oct. 19-24, 2003. Berlin; New York: Springer, 2005. ISBN 354023972.
- Tyson, R.K. Adaptive optics engineering handbook. New York: Marcel Dekker, 2000. ISBN 0824782755.

### Complementaria:

- Roggemann, M.C.; Welsh, B. Imaging through turbulence. Boca Raton: CRC Press, 1996. ISBN 0849337879.
- Love, G.D. Adaptive optics for industry and medicine: proceedings of the 2nd international workshop, University of Durham, England, July 12-16, 1999. London: World Scientific, 2000. ISBN 9810241151.
- Malacara, D. (ed.). Optical shop testing. 3rd ed. New York [etc.]: John Wiley & Sons, 2007. ISBN 9780471484042.