



Guía docente 32079 - DH - Holografía Digital

Última modificación: 13/05/2015

Unidad responsable: Escuela Técnica Superior de Ingeniería de Telecomunicación de Barcelona
Unidad que imparte: 1022 - UAB - (CAS) pendent.

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: Juan Campos (UAB), Estela Martín (UB)

Otros: Estela Martín (UB)

METODOLOGÍAS DOCENTES

Presencial Teaching + activities

OBJETIVOS DE APRENDIZAJE DE LA ASIGNATURA

Digital holography is a widespread technique allowing dynamic wave front control, with many applications such as beam steering and shaping, adaptive optics, optical interconnections and holographic optical tweezers, among others. The student will learn how to compute a digital hologram, encode it in a limited diffractive element and optically reconstruct it. This subject is mainly experimental and it is essentially held in the computer room and in the Laboratory.

CONTENIDOS

(CAST) Introduction

(CAST) Diffractive elements: constraints

(CAST) Encoding methods

(CAST) Other techniques

(CAST) -



SISTEMA DE CALIFICACIÓN

- At the end of the term the students should give an oral presentation and prepare a dissertation about a practical work developed during the course, which includes the development of a modern hologram encoding method and its optical reconstruction. This is about 75% of the evaluation.
- They should also write down short reports on the practical sessions (about 25% of the evaluation).

NORMAS PARA LA REALIZACIÓN DE LAS PRUEBAS.

The usual in University teaching

BIBLIOGRAFÍA

Complementaria:

- Bryngdahl, O.; Wyrowsky, F. "Digital holography-computer-generated holograms". Wolf, E. (ed.). Progress in optics. Amsterdam [etc.]: Elsevier, 1990. Vol. 28, p. 3-86.
- Dallas, W.J. "Computer generated holograms". Frieden, B.R. The computer in optical research methods and applications. Berlin: Springer Verlag, 1980. P. 291-366.
- Yaroslavsky, L.P.; Merzlyakov, N.S. Methods of digital holography. New York [etc.]: Consultants Bureau, 1980. ISBN 0306109638.
- Soifer, V.A.; Kotlyar, V.; Daskalovich, L. Iterative methods for diffractive optical elements computation. London: Taylor & Francis, 1997. ISBN 9780748406340.
- "Digital holography (special issue)". Applied optics [en línea]. 2006, Vol. 45, Issue 5, pp. 821-983 [Consulta: 29/11/2011]. Disponible a: <http://www.opticsinfobase.org/ao/issue.cfm?volume=45&issue=5>.