Guía docente
32064 - LST - Sistemas y Tecnología Láser

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).
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:** 5.0 **Idiomas:** Inglés

PROFESORADO

Profesorado responsable: FIDEL VEGA LERIN

Otros: SANTIAGO VALLMITJANA

METODOLOGÍAS DOCENTES

Presencial teaching + activities

OBJETIVOS DE APRENDIZAJE DE LA ASIGNATURA

The aim of the subject is to provide a detailed description of the laser systems currently used in both scientific and industrial fields. Specific attention will be paid to cutting-edge applications.
The subject will begin with a brief introduction to the basic concepts of lasers. We will work on characteristics and properties of electromagnetic radiation emitted by lasers, components needed and techniques involved in shaping and characterization of laser beams. Laser beam interaction with materials will be studied in detail.
The final part will deal with laser system, their specifications, control and integration in automatic systems. Scientific and Industrial applications will be studied with special interest.

CONTENIDOS

(CAST) -Laser fundamentals.

(CAST) -Laser beam characterization, shaping and transmission

(CAST) -Laser beam interaction with materials.

(CAST) -Laser systems.

(CAST) -Laser systems applications.

SISTEMA DE CALIFICACIÓN

· Homework
· Final project
· Exam

NORMAS PARA LA REALIZACIÓN DE LAS PRUEBAS.

The usual in University teaching

BIBLIOGRAFÍA

Básica:

- Von Allmen, M.; Blatter, A. Laser-beam interactions with materials: physical principles and applications. 2nd updated ed. Berlin [etc.]: Springer, 1995. ISBN 3540594019.
- Schuöcker, D. (ed.). Handbook of the Eurolaser Academy. London [etc.]: Chapman & Hall, 1998. ISBN 9780412825903.
- Hecht, J. The Laser guidebook. 2nd ed. New York: Mc Graw-Hill, 1992. ISBN 0070277370.
- Svelto, O. Principles of lasers. 4th ed. New York ; London: Plenum Press, 2010. ISBN 9781441932891.
- Crafer, R.C.; Oakley, P.J. (eds.). Laser processing in manufacturing. London [etc.]: Chapman & Hall, 1993. ISBN 0412415208.
- Silfvast, W.T. Laser fundamentals. 2nd ed. Cambridge: Cambridge University Press, 2004. ISBN 0521833450.
- Garriga, M.; Vilaseca, R. "Els làsers". Revista de física [en línea]. Núm. 13 (1997), p. 4-18 [Consulta: 21/12/2011]. Disponible a: http://www.raco.cat/index.php/RevistaFisica.
- Wilson, J.; Hawkes, J.F.B. Lasers: principles and applications. New York [etc.]: Prentice Hall, 1987. ISBN 013523705X.
- Charschan, S.S. (ed.). Guide to laser materials processing. Orlando [Fla.]: Laser Institute of America, 1993. ISBN 0912035110.
- Migliore, L. (ed.). Laser materials processing. New York [etc.]: Marcel Dekker, 1996. ISBN 0824797140.
- Ready, J.F. Industrial applications of lasers. 2nd ed. San Diego [etc.]: Academic Press, 1997. ISBN 0125839618.
- Steen, W.M.; Mazumder, J. Laser material processing. 4th ed. New York: Springer, 2010. ISBN 9781849960618.
- Brannon, J. Excimer laser ablation and etching. New York: The American Vacuum Society Education Committee, 1993. ISBN 1563962454.