

## 820082 - FA - Applied Photonics

Coordinating unit: 295 - EEBE - Barcelona East School of Engineering

Teaching unit: 748 - FIS - Department of Physics

Academic year: 2017

Degree: BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
BACHELOR'S DEGREE IN BIOMEDICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
BACHELOR'S DEGREE IN ENERGY ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
BACHELOR'S DEGREE IN ENERGY ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
BACHELOR'S DEGREE IN BIOMEDICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
BACHELOR'S DEGREE IN MATERIALS ENGINEERING (Syllabus 2010). (Teaching unit Optional)

ECTS credits: 6 Teaching languages: Catalan

### Teaching staff

Coordinator: Muriel Botey

Others: Muriel Botey  
Roberto Macovez

### Prior skills

Students should have the prior knowledge of mathematics and physics acquired in the initial phase.

### Degree competences to which the subject contributes

Transversal:

1. EFFECTIVE USE OF INFORMATION RESOURCES - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.

### Learning objectives of the subject

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### Study load

Total learning time: 150h	Hours large group:	45h	30.00%
	Hours medium group:	0h	0.00%
	Hours small group:	15h	10.00%
	Guided activities:	0h	0.00%
	Self study:	90h	60.00%

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### Content

(ENG) -Tema1: Naturalesa i propagació de la llum: pinces òptiques i antenes.

Degree competences to which the content contributes:

(ENG) -Tema2: Fonts de llum: energia solar, bombetes, LEDs i Làsers.

Degree competences to which the content contributes:

(ENG) -Tema3: Polarització: filtres i visió 3D.

Degree competences to which the content contributes:

(ENG) -Tema4: Òptica geomètrica, de les micres als anys llum: microscopis, antenes parabòliques, telescopis,...

Degree competences to which the content contributes:

(ENG) -Tema5: Interferències lluminoses: mesura indirecta nanomètrica, filtres de colors,...

Degree competences to which the content contributes:

(ENG) -Tema6: Difracció i holografia.

Degree competences to which the content contributes:

(ENG) -Tema7: Tecnologia làser: tall, soldadura, marcatge,...

Degree competences to which the content contributes:

(ENG) -Tema8: Comunicacions òptiques. Fibres òptiques.

Degree competences to which the content contributes:

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### Bibliography

#### Basic:

Saleh, Bahaa E. A.; Teich, Malvin Carl. Fundamentals of photonics. 2nd ed. New York [etc.]: John Wiley & Sons, cop. 2007. ISBN 9780471358329.

Tipler, Paul Allen; Mosca, Gene. Física per a la ciència i la tecnologia. Barcelona [etc.]: Reverté, 2010. ISBN 9788429144321.

Fowles, Grant R. Introduction to modern optics. 2nd ed. Nova York: Dover Publications, 1989. ISBN 0486659577.