SUBJECT TEACHING GUIDE

1026 - Photonic Sensors

University Master's Degree in the Science and Engineering of Light

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	University Master's Degree in the Science and Engineering of Light			Type and Year	Optional. Year 1
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	SPECIALIZING IN SENSORS AND COMMUNICATIONS Specialisation Module				
Course unit title and code	1026 - Photonic Sensors				
Number of ECTS credits allocated	6	Term		Semester based (2)	
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. TECNOLOGIA ELECTRONICA E INGENIERIA DE SISTEMAS Y AUTOMATICA
Name of lecturer	JOSE MIGUEL LOPEZ HIGUERA
E-mail	miguel.lopezhiguera@unican.es
Office	Edificio Ing. de Telecomunicación Prof. José Luis García García. Planta: - 3. DESPACHO PROFESORES (S324)
Other lecturers	ADOLFO COBO GARCIA

3.1 LEARNING OUTCOMES

- The student will: Know the fundamentals and usefulness of techniques and technologies of sensor systems based on light sciences and technologies. Analyze and differentiate different types of photonic sensors. Design simple photonic sensor systems. Is able to process the output of sensors to obtain useful information from them. Select the optimal technology for each specific application, paying special attention to those corresponding to the communications, security, biomedical and industrial sectors, among others.

4. OBJECTIVES

To know the fundamentals and usefulness of techniques and technologies of sensor systems based on light sciences and technologies. To analyze and differentiate different types of photonic sensors. To design simple photonic sensor systems. To apply data processing techniques to obtain useful information from sensors. To select the optimal technology for each specific application, paying special attention to those corresponding to the communications, security, biomedical and industrial sectors, among others.

6. COURSE ORGANIZATION

CONTENTS	
1	Introduction
2	General sensing concepts
3	Guided-based sensors
4	Non-guided sensors
5	Imaging sensors
6	Data processing for sensing
7	final test

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Assessment activities during the semester	Others	No	Yes	25,00
Final exam	Written exam	Yes	Yes	25,00
Final project (oral presentation)	Others	No	Yes	50,00
TOTAL				100,00

Observations

Activities during the semester will be based on oral presentations, collaborative or individual assigments, or written exams.
Final project will be an oral presentation of a chosen topic related to the subject.
Final exam could be a written exam or a multiple-choice test.

Observations for part-time students

Same assessments but flexible dates.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

1. Handbook of Optical Fibre Sensing Technology (José Miguel López-Higuera (Editor)) / Wiley
2. An Introduction to Optoelectronic Sensors (Giancarlo C Righini, Antonella Tajani, Antonello Cutolo)
3. Mobile Health: Sensors, Analytic Methods, and Applications (Editors: Rehg, James M., Murphy, Susan A., Kumar, Santosh (Eds.)) / Springer
4. Optical Sensors: Basics and Applications 1st Edition (by Jörg Haus (Author)) / Wiley
5. Handbook of Optical Sensors 1st Edition (by Jose Luis Santos (Editor), Faramarz Farahi (Editor)) / CRC Press