SUBJECT TEACHING GUIDE

G829 - Electronic Systems for Information Management

Degree in Telecommunication Technologies Engineering

Academic year 2020-2021

1. IDENTIFYING DATA					
Degree	Degree in Telecommunication Technologies Engineering			Type and Year	Optional. Year 4
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Electronic Systems Design				
Course unit title and code	G829 - Electronic Systems for Information Management				
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	HECTOR POSADAS COBO
E-mail	hector.posadas@unican.es
Office	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 3. DESPACHO PROFESOR (S3006)
Other lecturers	EUGENIO VILLAR BONET JESUS MIGUEL PEREZ LLANO

3.1 LEARNING OUTCOMES
- Know the methodologies applied to digital systems design as well as its verification, synthesis and implementation techniques
- Master the design of digital systems on FPGA programmable devices
- Know the methodologies required to design electronic systems based on HW-SW platforms
- Obtain capabilities for designing electronic systems for communications in fixed environments as well as in mobile, wireless or network environments

4. OBJECTIVES
Knowledge of electronic design methodologies based on HW-SW platforms
Capabilities for component integration
Capacity to implement electronic communications systems in fixed environments and with wireless communications
Capacity for designing intelligent platforms

6. COURSE ORGANIZATION	
CONTENTS	
1	Basic concepts: Embedded HW / SW Systems Multi-Processor Systems on Chip Executive platforms Flow of Embedded Systems Design Programming and design tools
2	Executive Platform: Embedded System Architecture Integration of soft-core processors in FPGAs Memory and peripherals Buses in embedded systems Application-Specific HW design and integration Design and integration of HW/SW platforms in FPGA Peripheral access and interrupt mechanisms
3	Embedded SW development: Cross-compilation process Integration of Embedded SW Embedded Operating Systems Debugging, validation and optimization of embedded SW
4	Interaction with the environment and applications: Sensors and actuators Communication devices Embedded intelligence Cyber-Physical Systems Industrial applications

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Continuous assessment exercises	Work	No	Yes	40,00
Laboratory activities	Laboratory evaluation	No	No	30,00
Project	Work	No	Yes	30,00
TOTAL				100,00

Observations

The final grade will be obtained as the weighted average of the grade of the exercises (40%), laboratory activities (30%) and the project (30%).
If the student suspends the evaluation in first call, he / she will be able to recover the exercises by means of an exam in second call. The project can also be recovered through its presentation in second call.
Continuous Assestment Exercises:
Students will be offered different exercises on specific aspects of the subject, combining exercises to be done in the classroom with exercises that include more autonomous work to do at home.
Laboratory activities:
Each activity will be evaluated considering the quality of the proposed solution, systemic thinking and ability to solve the problem.
Project:
The students will be asked to define and implement a project in which the concepts and elements developed in the subject are used and which they must carry out autonomously, with limited support from the teacher.

Observations for part-time students

For students who can only attend at part-time, an specific evaluation procedure will be defined according to their possibilities. This procedure will be based on the standard evaluation procedure, including the possibility of directly carrying out an examination of exercises instead of performing the exercises of continuous assestment and of carrying out the practices in an autonomous way, presenting the results to the teacher, instead of assisting to the lab periodically.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

E. A. Lee and S. A. Seshia: "Introduction to Embedded Systems: A Cyber-Physical Systems Approach", MIT Press, Second Edition, 2017

D. Gajski, S. Abdi, A. Gerstlauer G. Schirner : "Embedded System Design: Modeling, Synthesis and Verification", Springer, 2009