SUBJECT TEACHING GUIDE

G1000 - Power Electronics

Degree in Industrial Electronic Engineering and Automatic Control Systems
First Degree in Industrial Electronic Engineering and Automatic Control Systems

Academic year 2024-2025

1. IDENTIFYING DATA						
Degree	Degree in Industrial Electronic Engineering and Automatic Control Systems First Degree in Industrial Electronic Engineering and Automatic Control Systems			Type and Year	Compulsory. Year 3 Compulsory. Year 3	
Faculty	School of Industrial Engineering and Telecommunications					
Discipline	Subject Area: Industrial Electronics Module: Specific Technology					
Course unit title and code	G1000 - Power Electronics					
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	FRANCISCO JAVIER DIAZ RODRIGUEZ
E-mail	javier.diaz@unican.es
Office	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 3. DESPACHO PROFESORES (S3083)
Other lecturers	CHRISTIAN BRAÑAS REYES

3.1 LEARNING OUTCOMES

- The objetive of the course is providing to the students with knowledge of high efficiency electrical energy convertion techniques with PWM control.
  Power electronic devices and magnetic components design.
  Converters in equilibrium and Converter dynamics and control

4. OBJECTIVES

Achieve the learning outcomes of the course

6. SUBJECT PROGRAM

CONTENTS	
1	Introduction
2	Converters in equilibrium
3	Converter dynamics and control
4	Magnetics

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Laboratory Evaluation	Laboratory evaluation	Yes	Yes	40,00
continuous assessment	Work	Yes	Yes	10,00
final exam	Written exam	Yes	Yes	50,00
TOTAL				100,00

Observations

To pass the course, the student must to approve the final exam and laboratory evaluation separately. In the case that the health criteria make it necessary, the evaluation tests will be carried out following the mixed teaching format: classroom and non-classroom classes. In the most extreme case that students and teachers cannot go to the classroom, the assessment tests will be carried out using telematic tools. In these cases, the content of the tests, being similar to the face-to-face case, would be totally or partially individualized for each student.

Observations for part-time students

When obtaining a 50% evaluation with evaluation activities integrated into the teaching (continuous evaluation and laboratory) the evaluation criteria are the same for all students. Part-time students with incompatibility of schedule receive direct personal attention or by telematic tools on the contents and continuous assessment. The virtual classroom facilitates access to information and continuous assessment tests.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Autor: Robert W. Ericsson, Dragan Maksimovic
Título: Fundamentals of Power Electronics (2a Ed.)
Editorial: Kluwer Academic Publisher Group, 2001
Comentarios: Es el libro que se sigue durante el curso. Ofrece un enfoque moderno de la Electrónica de Potencia. El libro se organiza en 20 capítulos donde se analizan en detalle los convertidores así como su modelado y control. El diseño de los elementos magnéticos es tratado con amplitud. Contiene a su vez numerosos ejercicios y ejemplos resueltos.

Autor: A. Barrado, A. Lázaro
Título: Problemas de Electrónica de Potencia
Editorial: Pearson Prentice Hall. 2007
Comentarios: Es un libro recopilatorio de problemas de Electrónica de Potencia que han realizado varios profesores de universidades españolas.