

## SUBJECT TEACHING GUIDE

### G1000 - Power Electronics

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

Academic year 2021-2022

1. IDENTIFYING DATA					
Degree	Degree in Industrial Electronic Engineering and Automatic Control Systems			Type and Year	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 objective of the course is providing to the students with knowledge of high efficiency electrical energy conversion 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. COURSE ORGANIZATION

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				
<p>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.</p>				
Observations for part-time students				
<p>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.</p>				

## 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.

