

## 29822 - Power Electronics

### Información del Plan Docente

<b>Academic Year</b>	2016/17
<b>Academic center</b>	110 - Escuela de Ingeniería y Arquitectura 326 - Escuela Universitaria Politécnica de Teruel
<b>Degree</b>	440 - Bachelor's Degree in Electronic and Automatic Engineering 444 - Bachelor's Degree in Electronic and Automatic Engineering 330 - Complementos de formación Máster/Doctorado
<b>ECTS</b>	6.0
<b>Course</b>	XX
<b>Period</b>	Indeterminate
<b>Subject Type</b>	ENG/Complementos de Formación, Compulsory
<b>Module</b>	---

### **1.Basic info**

#### **1.1.Recommendations to take this course**

#### **1.2.Activities and key dates for the course**

### **2.Initiation**

#### **2.1.Learning outcomes that define the subject**

#### **2.2.Introduction**

### **3.Context and competences**

#### **3.1.Goals**

#### **3.2.Context and meaning of the subject in the degree**

#### **3.3.Competences**

#### **3.4.Importance of learning outcomes**

### **4.Evaluation**

### **5.Activities and resources**

#### **5.1.General methodological presentation**

The teaching-learning process is based on

- Lectures, in which the theoretical bases are exposed.
- Problem classes, in which problems and representative cases are solved.
- Laboratory sessions and related homework, where computer simulations and experimental setups are performed, and the results are reported.

## **5.2.Learning activities**

- 1) **Lectures** (about 30 hours)
- 2) **Problem classes** (about 15 hours)
- 3) **Laboratory sessions** (about 15 hours)
- 4) **Student homework** (about 15 hours, including 2 tutorial hours)
- 5) **Study** (about 71 hours)
- 6) **Evaluation tests** (about 4 hours)

## **5.3.Program**

- **INTRODUCTION:**

1. Introduction to power electronics.

- **POWER ELECTRONIC CONVERTERS:**

2. AC-DC converters (rectifiers).
3. DC-DC converters.
4. DC-AC converters (inverters) and AC-AC converters.
5. Resonant converters: overview.

- **POWER ELECTRONIC DEVICES:**

6. Power diodes and thyristors.
7. Power transistors.
8. Other devices and integrated power circuits.

## **5.4.Planning and scheduling**

Lectures, problem classes and laboratory sessions are held according to the schedule set by the Center, available on its website. The other activities will be planned depending on the number of students and will be announced.

## **5.5.Bibliography and recommended resources**

- Hart, Daniel W. Power electronics / D.W. Hart McGraw-Hill, 2011
- Mohan. Ned. Power Electronics : a First Course / N. Mohan John Wiley and Sons, 2012
- Problemas de electrónica de potencia / coordinación y revisión técnica Andrés Barrado Bautista, Antonio Lázaro

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- Blanco Madrid [etc.] : Pearson Educación, D.L. 2007
- 1. Hart, Daniel W. Electrónica de potencia / Daniel W. Hart ; traducción, Vuelapluma ; revisión técnica, Andrés Barrado Bautista...[et al.] . - 1a. ed. en español Madrid [etc.] : Prentice-Hall, D.L. 2001
  - 2.3 Mohan, Ned. Power Electronics: a First Course / N. Mohan John Wiley and Sons, 2012
  - 2.1 Problemas de electrónica de potencia / coordinación y revisión técnica Andrés Barrado Bautista, Antonio Lázaro Blanco Madrid [etc.] : Pearson Educación, D.L. 2007
  - 2.2 Mohan, Ned. Power electronics : converters, applications and design / Ned Mohan, Tore M. Undeland, William P. Robbins . - 3rd. ed. [New York] : John Wiley & Sons, cop. 2003
  - 2.4 Kassakian, John G.. Principles of power electronics / John G. Kassakian, Martin F. Schlecht, George C. Verghese Reading,Massachusetts : Addison-Wesley, cop. 1991
  - 2.5 Krein, Philip T.. Elements of power electronics / Philip T. Krein Oxford ; New York : Oxford University Press, 1998
  - 2.6 Erickson, Robert W.. Fundamentals of power electronics / Robert W. Erickson, Dragan Maksimovic . - 2nd ed., 6th print. New York : Springer, 2004
  - 2.7 Rashid, Muhammad H.. Electrónica de potencia : circuitos, dispositivos y aplicaciones / Muhammad H. Rashid ; traducción, Virgilio González Pozo ; revisión técnica, Agustín Suárez Fernández [y] Miguel Angel González del Moral . - 3ª ed. México [etc.] : Pearson Educación, 2004
  - 2.8 Ballester Portillo, Eduard. Electrónica de potencia : principios fundamentales y estructuras básicas / Eduard Ballester, Robert Piqué . - 1ª ed. Barcelona : Marcombo, 2011
  - 2.9 Martínez García, Salvador. Electrónica de potencia : componentes, topologías y equipos / Salvador Martínez García, Juan Andrés Gualda Gil Madrid : Thomson Paraninfo, D.L. 2006
  - Mohan, Ned. Power electronics : converters, applications and design / Ned Mohan, Tore M. Undeland, William P. Robbins . - 3rd. ed. [New York] : John Wiley & Sons, cop. 2003
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  - Erickson, Robert W.. Fundamentals of power electronics / Robert W. Erickson, Dragan Maksimovic New York : Kluwer Academic Publishers, 2011
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