

## 60838 - Resonant electronic converters

### Información del Plan Docente

Academic Year	2017/18
Subject	60838 - Resonant electronic converters
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	532 - Master's in Industrial Engineering
ECTS	6.0
Year	2
Semester	First semester
Subject Type	Optional
Module	---

### **1.General information**

#### **1.1.Introduction**

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

#### **1.3.Context and importance of this course in the degree**

#### **1.4.Activities and key dates**

### **2.Learning goals**

#### **2.1.Learning goals**

#### **2.2.Importance of learning goals**

### **3.Aims of the course and competences**

#### **3.1.Aims of the course**

#### **3.2.Competences**

### **4.Assessment (1st and 2nd call)**

#### **4.1.Assessment tasks (description of tasks, marking system and assessment criteria)**

### **5.Methodology, learning tasks, syllabus and resources**

#### **5.1.Methodological overview**

The methodology followed in this course is oriented towards achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, practice sessions, problem-solving, case studies, laboratory sessions, and autonomous work.

### 5.2.Learning tasks

The course includes the following learning tasks:

- **Lectures** (20 hours). Explanation of theoretical contents.
- **Practice sessions** (10 hours). Problem-solving and case studies.
- **Laboratory sessions** (15 hours). Computer simulations and experimental setups are carried out, and the results are reported.
- **Assignments and homework** (40 hours, including 4 tutorial hours)
- **Autonomous work and study** (63 hours)
- **Assessment tests** (2 hours)

### 5.3.Syllabus

The course will address the following topics:

1. Introduction to resonant converters.
2. Resonant circuits.
3. Full-bridge and half-bridge resonant converters.
4. Single-switch resonant converters.
5. Generalized modeling of resonant converters.
6. Applications.

### 5.4.Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the EINA website.

### 5.5.Bibliography and recommended resources

1. **Basic materials:** will be uploaded at the start of the academic year on <http://moodle2.unizar.es>

#### 2. Reference bibliography:

- M. K. Kazimierczuk, D. Czarkowski, *Resonant Power Converters*. John Wiley & Sons, 2011.
- A. Barrado y otros, *Problemas de Electrónica de Potencia*. Pearson Prentice-Hall, 2007.

#### 3. Supplementary bibliography:

- M. K. Kazimierczuk, *RF Power Amplifiers*. John Wiley & Sons, 2008.
- F. C. Lee (ed.), *High-Frequency Resonant and Soft-Switching Converters*. Center for Power Electronics Systems, Virginia Polytechnic Institute and State University, 1991.
- N. Mohan, T. M. Undeland, W. P. Robbins, *Power Electronics: Converters, Applications and Design*. John Wiley and Sons, 2003.
- R. W. Erickson, D. Maksimovik, *Fundamentals of Power Electronics*. Kluwer Academic Publishers, 2011.
- J. G. Kassakian, M. F. Schlecht, G. C. Verghese, *Principles of Power Electronics*. Addison-Wesley, 1991.
- M. H. Rashid (ed.), *Power Electronics Handbook*. Academic Press, 2001.
- Specific related papers published by the IEEE.