

60838 - Resonant electronic converters

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	532 - Master's in Industrial Engineering
ECTS	6.0
Course	2
Period	First semester
Subject Type	Optional
Module	---

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 representative cases are developed.

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- 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 20 hours)
- 2) **Problem classes** (about 10 hours)
- 3) **Laboratory sessions** (about 15 hours)
- 4) **Student homework** (about 40 hours, including 4 tutorial hours)
- 5) **Study** (about 63 hours)
- 6) **Evaluation tests** (about 2 hours)

5.3.Program

1. Introducción 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.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

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

2. **Reference bibliography:**

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- 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.