Academic Year/course: 2023/24

29841 - Switching Power Supplies

Syllabus Information

Academic year: 2023/24 Subject: 29841 - Switching Power Supplies Faculty / School: 110 - Escuela de Ingeniería y Arquitectura Degree: 440 - Bachelor's Degree in Electronic and Automatic Engineering ECTS: 6.0 Year: 4 Semester: Second semester Subject type: Optional Module:

1. General information

Every electronic circuit or equipment requires a power supply; the objective of this course is to train the student in the analysis and design of linear and switched-mode electronic power supplies for telecommunication, industrial, computer, automotive, home appliance, etc. systems and equipment.

These approaches and objectives are aligned with some of the Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (<u>https://www.un.org/sustainabledevelopment/es/)</u>.Specifically, the learning activities foreseen in this subject will contribute to the achievement of Objectives 7.2 and 7.3 of Goal 7, Objective 8.2 of Goal 8, and Objectives 16.6 and 9.5 of Goal 9.

2. Learning results

- Know and design linear and switched-mode power supplies.
- Know the linear regulators and other specific integrated circuits required in the design of power supplies.
- Design DC-DC converters for switched-mode power supplies.
- Design the magnetic components required for switch-mode power supplies.

3. Syllabus

The contents developed in the face-to-face classes are as follows:

- Introduction to power supplies.
- · Linear sources.
- Switched-mode power supplies: general information.
- Non-isolated switched-mode power supplies.
- Isolated switched-mode power supplies.
- · Active components.
- · Capacitive passive components.
- Passive magnetic components.

4. Academic activities

The learning activities foreseen in this subject are the following:

- 1. Lectures (15 hours).
- 2. Problem solving and case studies (approximately 15 hours)
- 3. Laboratory practices (approximately 30 hours)
- 4. Teaching assignments (approximately 27 hours)
- 5. Study (approximately 60 hours)
- 6. Assessment tests (3 hours)

5. Assessment system

The subject will be evaluated as follows:

E1. Observation and analysis of practices. Previous preparation work and performance in the laboratory will be valued. It will account for 50% of the grade.

E2. Subject work. Work on the analysis and exposition of a technical article related to the subject.

It will account for 25% of the grade.

E3. Theoretical examination. It will consist of a combination of problems and short answer questions. It will account for 25% of the grade and a minimum of 40% is required to pass.

Global test:

In the official examinations there will be a global written test with theoretical-practical questions and/or problems. The subject is passed with a total grade higher or equal to 5 points out of 10.