COURSE DATA

DATA SUBJECT

Code: 34947
Name: Industrial application
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
1404 - Degree in Industrial Electronic Engineering	Escola Tècnica Superior d'Enginyeria	4	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1404 - Degree in Industrial Electronic Engineering	Optional subjects	ELECTIVES

COORDINATION

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SUMMARY

This is a subject that should provide students with a global vision and practice of industrial applications related to electronics. Each industrial application of electronic or set of related applications is presented as a thematic unit and within that unit subsystems involved in each application are explained. Each application will be studied in depth assigned visit a company where the application is made.

Apart from the purely theoretical course contents will provide the student with general knowledge to solve engineering problems.

This course is an optional character that is taught in the second semester of IMCI. The total workload is 6 ECTS. The workload for students is 150 hours over the semester, of which 60 are on-site and 90 are individual work.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

Since this is a course that emphasizes and in the final application and every system is composed of other electrical and electronic subsystems is highly recommended to have prior knowledge of basic industrial electronics.

COMPETENCES / LEARNING OUTCOMES

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CO1 - More comprehensive skills than those acquired in compulsory subjects must be acquired in elective subjects.

DESCRIPTION OF CONTENTS

1. Industrial Applications of Power Electronics.

a. Feeding system.
b. Power supply systems for móvil phones.
c. Variable speed drives.
d. Power systems in the home environment.
e. Lighting system.
f. Power systems for materials processing.

2. Electrical networks.

a. HVAC alternative current transmission.
b. HVDC transmission current continuously.
c. Electrical distribution system DC.
d. Introduction to smart grids.

3. e-mobility.

a. Introduction to electric vehicle.
b. Charging system for electric vehicles.

4. Introduction to Industrial Applications.

a. Introduction
b. Classification.
c. Utilization of Electronic Industry. Sensors, actuators and controls.
d. The energy conversion.

5. Applications of Electronics in primary industry.

a. Introduction.
b. Sensors in the primary industry.
c. Drivers of the primary industry.
d. Control systems in primary industry.
e. Example cement manufacturing.

6. Industrial applications in the manufacture of equipment and tools.

a. Introduction.
b. Equipment manufacturing industry. Manufacture of machine tools.
c. Technologies used in complex machines.
d. Sensors, controllers and actuators.
e. Example machinery manufacturing heat treatment.

7. Industrial Applications of production lines.

a. Introduction.
b. The automation of a process.
c. Manual Lines, semiautomatic and fully automatic lines.
d. Example of automatically electronics manufacturing.
e. Example of manufacturing products for the food industry.
f. Example of semi-finished manufacturing industry products (pipes).

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	40,00
Laboratory	20,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours

Attendance at other activities	0,00
Individual or group project	35,00
Independent study and work	30,00
Preparation of lessons	10,00
Preparation for assessment activities	15,00
Resolution of case studies	0,00
Total hours	**90,00**

TEACHING METHODOLOGY

The teaching methods employed in the development of the course are:

a) Theoretical activities.

Expository development of matter with the student's participation in the resolution of specific issues (CO1).

b) Practical activities.

Solving practical problems and visits to companies where industrial applications are made (CO1).

c) Student's personal work.

Performing outside the classroom to issues and problems as well as the preparation of classes and exams (study). This task will be performed individually and try to promote self-employment (CO1).

We will use e-learning platforms (LMS) to support communication with students. Through it the student will have access to course materials used in class, as well as solving problems and exercises.

EVALUATION

The **first evaluation** of the course will be carried out by an individual test, which may be by submitting work of an item on the contents of the subject, through a written exam or both. The work should be submitted before the end of the second quarter to Professor for evaluation (CO1).

The **second evaluation** the Theory it will take place through a written examination concerning the contents of the Course (CO1).

In any case, the system of evaluation will govern by the established in the Regulation of Evaluation and Qualification of the University of València for Degrees and Masters

(http://www.uv.es/graus/normatives/2017_108_Reglament_avaluacio_qualificacio.pdf).

REFERENCES

- Daniel W. Hart.: Electrónica de Potencia Ed. Prentice Hall, 2001, ISBN: 84-205- 3179-0.
- Mohan, Undeland, Robbins.: Power Electronics. Converters, applications and design. Ed John Wiley & Sons. Inc, 2o edición. 1995.
- J.G. Kassakian, M.F. Schlecht, G.C. Verghese., Principles of Power Electronics, Ed. Addison-Wesley, 1991.
- Jose M. de Juana, Energías renovables para el desarrollo. Editorial Thomson Paraninfo. Madrid, 2007.