Course guide
330450 - SCE - Embedded Control Systems

Last modified: 21/04/2026

Unit in charge: Manresa School of Engineering
Teaching unit: 750 - EMIT - Department of Mining, Industrial and ICT Engineering.

Degree: BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2016). (Compulsory subject).
BACHELOR'S DEGREE IN AUTOMOTIVE ENGINEERING (Syllabus 2017). (Optional subject).

Academic year: 2026 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: Víctor Barcons Xixons

Others:

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. The ability to specify, analyze, design, evaluate, and document microcomputer-based systems, as well as their implementation alternatives in order to form a built-in control system.
2. The ability to use microcomputer tools and programming languages.
3. The knowledge and ability to use existing tools and instrumentation for the analysis, design, development and verification of electronic, computer and communications systems.

Transversal:
6. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.
7. EFFECTIVE USE OF INFORMATI0N RESOURCES - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.
5. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

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STUDY LOAD

Type	Hours	Percentage
Hours small group	15,0	10.00
Self study	90,0	60.00
Hours large group	45,0	30.00

Total learning time: 150 h

CONTENTS

title english

Description:
content english

Full-or-part-time: 6h
Theory classes: 3h
Self study : 3h

title english

Description:
content english

Full-or-part-time: 35h
Theory classes: 12h
Practical classes: 1h
Self study : 22h

title english

Description:
content english

Full-or-part-time: 84h
Theory classes: 22h
Practical classes: 12h
Self study : 50h

title english

Description:
content english

Full-or-part-time: 25h
Theory classes: 8h
Practical classes: 2h
Self study : 15h

ACTIVITIES

1. CLASSE EXPOSITIVA I DE PROBLEMES (ENG)

Full-or-part-time: 41h
Theory classes: 41h

2. CLASSE DE LABORATORI (ENG)

Full-or-part-time: 45h
Laboratory classes: 15h
Self study: 30h

3. TREBALL INDIVIDUAL (ENG)

Full-or-part-time: 30h
Self study: 30h

4. PROVES ESCRITES INDIVIDUALS (ENG)

Full-or-part-time: 34h
Theory classes: 4h
Self study: 30h

GRADING SYSTEM

Any academic fraud, plagiarism or use or possession of unauthorised means in an assessment activity leads to a mark of zero (0) for the affected test or assignment. Furthermore, in accordance with the University's regulations, if disciplinary proceedings are initiated the subject is recorded as "Pending Assessment" until a decision is reached. These incidents are managed in accordance with the **Action Framework for Academic Integrity in Assessment at the UPC**.

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EXAMINATION RULES.

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BIBLIOGRAPHY

Basic:

- Manuals de referència i Notes d'aplicació del fabricant (en anglès).
- Noergaard, Tammy. Embedded systems architecture: a comprehensive guide for engineers and programmers [on line]. 2nd ed. Amsterdam: Elsevier/Newnes, 2013 [Consultation: 10/06/2022]. Available on: https://www-sciencedirect-com.recursos.biblioteca.upc.edu/book/9780750677929/embedded-systems-architecture. ISBN 9780123821966.
- Mazidi, Muhammad Ali; Naimi, Sarmad; Naimi, Sepehr. The AVR microcontroller and embedded systems: using Assembly and C [on line]. 2nd ed. Mazidi & Naimi, 2017 [Consultation: 31/05/2022]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?docID=5174828. ISBN 9780997925968.