

Course guide

330240 - SEC - Electronic Control Systems

Last modified: 04/05/2023

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

Degree: BACHELOR'S DEGREE IN ICT SYSTEMS ENGINEERING (Syllabus 2010). (Compulsory subject).

Academic year: 2023 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: Font Teixidó, Josep

Others:

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

1. Understanding and mastery of the basic concepts of linear systems and related functions and transforms, theory of electrical circuits, electronic circuits, physical principle of semiconductors and logic families, electronic and photonic devices, and their application for solving problems of I 'engineering
2. Knowledge of the main principles and applications of sensing systems and actuation systems
3. The knowledge and ability to use existing tools and instrumentation for the analysis, design, development and verification of electronic, computer and communications systems.
4. Ability to model and simulate systems in the field of the degree and apply the results to problem solving within this field.
5. Ability to understand and use feedback theory and electronic control systems
6. The ability to analyze, select and use real-time data processing, control and automation systems, especially in embedded systems.
7. The ability to design, understand and use systems made to perform a specific task based on the stimuli captured in their environment, including robotic systems. An understanding of the basic concepts of complementary technology in the field of ICT with the aim of acquiring a broad perspective of the technology applied to engineering.
8. Connections of basic aspects of complementary technologies in the ICT environment with the objective of acquiring a broad perspective of the technology applied to engineering.

Transversal:

9. EFFECTIVE USE OF INFORMATION 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.
10. 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.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

STUDY LOAD

Type	Hours	Percentage
Hours large group	60,0	40.00
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

(ENG) TEMA 1: INTRODUCCIÓ ALS SISTEMES ELECTRÒNICS DE CONTROL

Description:

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Full-or-part-time: 12h

Theory classes: 4h

Self study : 8h

(ENG) TEMA 2: MODELS DE SISTEMES FÍSICS CONTINUS

Description:

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Full-or-part-time: 32h

Theory classes: 12h

Self study : 20h

(ENG) TEMA 3: ANÀLISI DE LA RESPOSTA TEMPORAL DE SISTEMES LINEALS INVARIANTS

Description:

.

Full-or-part-time: 27h

Theory classes: 10h

Self study : 17h

(ENG) TEMA 4: ANÀLISI DE L'ESTABILITAT

Description:

.

Full-or-part-time: 22h

Theory classes: 8h

Self study : 14h

(ENG) TEMA 5:

Description:

.

Full-or-part-time: 51h

Theory classes: 20h

Self study : 31h



ACTIVITIES

(ENG) ACTIVITAT 1: EXÀMENS

Full-or-part-time: 6h

Theory classes: 6h

(ENG) ACTIVITAT 2: ESTUDI DE CONTINGUTS

Full-or-part-time: 45h

Self study: 45h

(ENG) ACTIVITAT 3: CLASSE EXPOSITIVA

Full-or-part-time: 26h

Theory classes: 26h

(ENG) ACTIVITAT 4: CLASSE DE PROBLEMES

Full-or-part-time: 28h

Theory classes: 28h

(ENG) ACTIVITAT 5: REALITZACIÓ D'EXERCICIS

Full-or-part-time: 45h

Self study: 45h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:

- Bolzern, Paolo; Scattolini, Riccardo; Schiavoni, Nicola. Fundamentos de control automático. 3ª ed. Madrid: McGraw-Hill, cop. 2008. ISBN 9788448166403.
- Ogata, Katsuhiko. Modern control engineering [on line]. 5th ed. Boston [etc.]: Pearson, cop. 2010 [Consultation: 02/06/2022]. Available on : https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=1259. ISBN 9780137133376.
- Apunts propis.