Course guide
340103 - CIEL-E4O09 - Electrical Circuits

Last modified: 10/06/2024

Unit in charge: Vilanova i la Geltrú School of Engineering
Teaching unit: 709 - DEE - Department of Electrical Engineering.

Degree: BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Optional subject).

Academic year: 2024 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: Blanqué Molina, Balduino
Rodríguez Bernuz, Joan Marc

Others: Blanqué Molina, Balduino

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. CE31. Knowledge of differents types of electrical disturbances and implementation of corrective measures.
2. CE32. Ability to analize electrical circuits in all possible regimes.

Transversal:
3. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.
4. 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
Self study	90,0	60.00
Hours large group	45,0	30.00
Hours small group	15,0	10.00

Total learning time: 150 h

CONTENTS

(ENG) Tema 1: Circuits trifàsics desequilibrats

Full-or-part-time: 11h
Theory classes: 3h
Practical classes: 2h
Self study : 6h

(ENG) Tema 2: Circuits amb excitació periòdica no sinusoïdal

Full-or-part-time: 17h
Theory classes: 5h
Practical classes: 2h
Self study : 10h

(ENG) Tema 3: Règims transitoris: Circuits de primer i segon ordre

Full-or-part-time: 32h
Theory classes: 8h
Practical classes: 4h
Self study : 20h

(ENG) Tema 4: Equacions d'estat

Full-or-part-time: 14h
Theory classes: 4h
Practical classes: 2h
Self study : 8h

(ENG) Tema 5: Anàlisi de circuits mitjançant mètodes operacionals

Full-or-part-time: 24h
Theory classes: 6h
Practical classes: 3h
Self study : 15h

(ENG) Tema 6: Quadripols biports

Full-or-part-time: 16h
Theory classes: 4h
Practical classes: 2h
Self study : 10h

(ENG) Pràctiques de simulació

Description:
P1 Introduction to circuit simulation with Matlab/Simulink.
P2 Simulation of circuits in direct current.
P3 Electronic circuits with signals.
P4 Circuits in permanent sine regime.
P5 Frequency analysis of electrical circuits.
P6 Temporary analysis of electrical circuits.

Full-or-part-time: 36h
Laboratory classes: 15h
Guided activities: 6h
Self study : 15h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:
- Nilsson, James W.; Riedel, Susan A. Circuitos eléctricos [on line]. 7a ed. México [etc.]: Pearson Educación, 2005 [Consultation: 16/02/2024]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=1294. ISBN 8420544582.
- Alexander, Charles K.; Sadiku, Matthew N. O. Fundamentos de circuitos eléctricos [on line]. 6a ed. Madrid: Mc Graw-Hill, 2018 [Consultation: 19/02/2024]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=8073. ISBN 9781456260897.
- Gómez Expósito, Antonio. Teoría de circuitos : ejercicios de autoevaluación. Madrid: Thomson-Paraninfo, 2005. ISBN 8497324188.
- Nahvi, Mahmood; Edminister, Joseph A. Circuitos eléctricos y electrónicos. 4a ed. Madrid [etc.]: Mc Graw-Hill, 2005. ISBN 8448145437.
- Goody, Roy W. OrCAD PSpice para Windows. 3a ed. Madrid [etc.]: Prentice Hall, 2002-2004. ISBN 8420534692, 8420537047, 8420541729.
- Ogayar Fernández, Blas; López Valdivia, Andrés. Teoría de circuitos con OrCAD PSpice : 20 prácticas de laboratorio. Madrid: Ra-ma, 2000. ISBN 8478974148.