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320027 - CAME - Machine Control and Operation

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 709 - EE - Department of Electrical Engineering
Academic year: 2019
Degree: BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
ECTS credits: 6 Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: Joan Montañá - JUAN MONTAÑA PUIG

Others: Jaime Saura Perise - JAIME SAURA PERISE

Prior skills

- Ability to understand the operation of electrical machines.
- Ability to solve problems with initiative, creativity, critical thought communication skills and transmission of knowledge, skills and abilities in the field of electricity.
- Ability to analyze and assess the social and environmental impact of technical solutions.
- Ability to apply the principles and methods of quality.
- Ability to work in a multilingual and multidisciplinary environment.

Degree competences to which the subject contributes

Specific:

3. ELE: Applied knowledge of power electronics.

4. ELE: Understanding of the principles of automatic control and their application to industrial automation.

5. ELE: Understanding of machine control, electric drive systems and their applications.

Transversal:

1. 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.
2. 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.
6. ENTREPRENEURSHIP AND INNOVATION - Level 3. Using knowledge and strategic skills to set up and manage projects. Applying systemic solutions to complex problems. Devising and managing innovation in organizations.

Learning objectives of the subject

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Study load

Total learning time: 150h	Hours large group:	45h	30.00%
	Hours medium group:	0h	0.00%
	Hours small group:	15h	10.00%
	Guided activities:	6h	4.00%
	Self study:	84h	56.00%

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Content

(ENG) Mòdul 1. Introducció	Learning time: 2h Theory classes: 1h Self study : 1h
(ENG) Mòdul 2. Introducció al control de posició velocitat i parell de les màquines elèctriques	Learning time: 41h Theory classes: 6h Practical classes: 4h Guided activities: 6h Self study : 25h
(ENG) Mòdul 3. Modelat de sistemes electromecànics	Learning time: 30h Theory classes: 5h Practical classes: 4h Laboratory classes: 2h Self study : 19h
(ENG) Mòdul 4. Introducció control de les màquines elèctriques en variables de Park	Learning time: 51h Theory classes: 12h Practical classes: 4h Laboratory classes: 5h Self study : 30h
(ENG) Mòdul 5. Modelat i control de les altres màquines d'execució especial	Learning time: 25h Theory classes: 4h Practical classes: 3h Laboratory classes: 2h Self study : 16h

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Qualification system

For those students who meet the requirements and submit to the reevaluation examination, the grade of the reevaluation exam will replace the grades of all the on-site written evaluation acts (tests, midterm and final exams) and the grades obtained during the course for lab practices, works, projects and presentations will be kept.
If the final grade after reevaluation is lower than 5.0, it will replace the initial one only if it is higher. If the final grade after reevaluation is greater or equal to 5.0, the final grade of the subject will be pass 5.0.

Bibliography

Basic:

Fraile Mora, Jesús. Máquinas eléctricas. 5a ed. Madrid: McGraw-Hill, 2003. ISBN 8448139135.

Bose, Bimal K. Power electronics and motor drives: recent advances and trends. Oxford: Academic, 2006. ISBN 9780120884056.

Krause, P. C.; Wasynczuk, O.; Sudhoff, S. D. Analysis of electric machinery and drive systems. 2nd ed. New York: IEEE; Wiley-Interscience, 2002. ISBN 047114326X.

Mohan, Ned. Electric drives : an integrative approach. Minneapolis: MNPERE, cop. 2003. ISBN 0-9663530-1-3.

Others resources: