

820145 - MXEQSEE - Condition Monitoring in Power Grids and Power Quality

Coordinating unit: 295 - EEBE - Barcelona East School of Engineering
Teaching unit: 709 - EE - Department of Electrical Engineering
Academic year: 2016
Degree: BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)
BACHELOR'S DEGREE IN ENERGY ENGINEERING (Syllabus 2009). (Teaching unit Optional)
BACHELOR'S DEGREE IN ENERGY ENGINEERING (Syllabus 2009). (Teaching unit Optional)
BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)
ECTS credits: 6 Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: ROBERTO VILLAFÁFILA ROBLES
Others: ROBERTO VILLAFÁFILA ROBLES - ANDREAS SUMPER

Requirements

Electric systems

Degree competences to which the subject contributes

Specific:

1. Apply regulations and standards based on sound criteria.
2. Carry out calculations for the design of power lines and electric power transmission systems.
3. Understand electrical power systems and their applications.

Transversal:

4. 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.

Teaching methodology

Lectures 30%, laboratoris 10% and self-study 60%.

Learning objectives of the subject

Knowledge of requirements regarding monitoring of power systems and the available tools for a proper exploitation, including operation (power quality) and maintenance (asset management).



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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:	0h	0.00%
	Self study:	90h	60.00%

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Content

<p>Introduction</p>	<p>Learning time: 12h Theory classes: 4h Self study : 8h</p>
<p>Description: Social, technical and economical context of monitoring of power systems and power quality.</p> <p>Specific objectives: Description of social, technical and economical context for monitoring of power systems and power quality.</p>	
<p>Monitoring of power systems</p>	<p>Learning time: 54h Theory classes: 16h Laboratory classes: 6h Self study : 32h</p>
<p>Description: Objectives of monitoring the operation of power systems. Components of power systems and their requirements regarding monitoring. Monitoring strategies for components and monitoring devices.</p> <p>Specific objectives: Knowledge of the objectives of monitoring the operation of power systems. Knowledge of components of power systems and their requirements regarding monitoring. Knowledge of monitoring strategies for components and monitoring devices.</p>	
<p>Power quality</p>	<p>Learning time: 84h Theory classes: 25h Laboratory classes: 9h Self study : 50h</p>
<p>Description: Power quality standards. Power quality disturbances: definition, causes and effects. Power quality solutions: appliances and equipment.</p> <p>Specific objectives: Knowledge of needs of a good power quality. Knowledge of origin of disturbances. Knowledge of power quality solutions: appliances and equipment.</p>	

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Qualification system

The professors will evaluate the students.

Final grade is calculated as following:

- Each of the partial exam per theme 30%
- Exercices and problems 15%
- Laboratory tutorials 15%
- General competence 10%

Bibliography

Basic:

Baggini, A. Handbook of power quality. Chichester: John Willey & Sons, cop. 2008. ISBN 9780470065617.

James, R.E.; Su, Q. Condition assessment of high voltage insulation in power system equipment [on line]. Stevenage: Institution of Engineering and Technology, 2008 Available on:

<<http://site.ebrary.com/lib/upcatalunya/docDetail.action?docID=10263820>>. ISBN 97808634173775.

Ras Oliva, E. Transformadores de potencia, de medida y de protección. 7^a ed. Barcelona: Marcombo, cop. 1988. ISBN 8426706908.