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%, laboratori 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

<table>
<thead>
<tr>
<th><strong>Total learning time:</strong> 150h</th>
<th>Hours large group: 45h</th>
<th>30.00%</th>
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<tbody>
<tr>
<td>Hours medium group: 0h</td>
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<td>0.00%</td>
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<tr>
<td>Hours small group: 15h</td>
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<td>10.00%</td>
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<td>Guided activities: 0h</td>
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<td>0.00%</td>
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<tr>
<td>Self study: 90h</td>
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<td>60.00%</td>
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<tr>
<td>Content</td>
<td>Learning time</td>
<td>Description:</td>
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<tr>
<td>---------</td>
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</tr>
<tr>
<td><strong>Introduction</strong></td>
<td>12h</td>
<td>Social, technical and economical context of monitoring of power systems and power quality.</td>
</tr>
<tr>
<td><strong>Monitoring of power systems</strong></td>
<td>54h</td>
<td>Objectives of monitoring the operation of power systems.</td>
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<td>Components of power systems and their requirements regarding monitoring.</td>
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<tr>
<td><strong>Power quality</strong></td>
<td>84h</td>
<td>Power quality standards.</td>
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<td></td>
<td></td>
<td>Power quality disturbances: definition, causes and effects.</td>
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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%
- Exercises and problems 15%
- Laboratory tutorials 15%
- General competence 10%

Bibliography

Basic:

