820122 - CEEREE - Power Plants and Renewable Energies

Coordinating unit: 295 - EEBE - Barcelona East School of Engineering
Teaching unit: 709 - DEE - Department of Electrical Engineering
Academic year: 2019
Degree: BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
ECTS credits: 6 Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: JORGE DE LA HOZ CASAS
Others: Primer quadrimestre:
        SERGIO CORONAS HERRERO - T11, T12
        JOSE MATAS ALCALA - T11, T12

        Segon quadrimestre:
        JORGE DE LA HOZ CASAS - M11, M12, M13
        JOSE MATAS ALCALA - M11, M12, M13

Requirements
MÀQUINES ELÈCTRIQUES I - Prerequisite

Degree competences to which the subject contributes

Specific:
2. Design power stations.
5. Understand the applications of renewable energies.

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.

Teaching methodology
The teaching methodology used is a mixed methodology based on the application of PBL methodology together with a theoretical introduction. This structure allows students contextualizing the work to be developed.

Learning objectives of the subject
The aim of the course is to provide the basic knowledge regarding the power generation activity in the Spanish electricity sector.
## Study load

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<tr>
<th>Study load</th>
<th>Hours</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Total learning time: 150h</td>
<td>45h</td>
<td>30.00%</td>
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<td>Hours large group:</td>
<td>0h</td>
<td>0.00%</td>
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<tr>
<td>Hours medium group:</td>
<td>15h</td>
<td>10.00%</td>
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<td>Hours small group:</td>
<td>0h</td>
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<td>Guided activities:</td>
<td>90h</td>
<td>60.00%</td>
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<td>Self study:</td>
<td>0h</td>
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## Content

| **(ENG) Introduction to the electricity production activity** | **Learning time:** 7h 30m  
Theory classes: 3h 30m  
Self study: 4h |
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| **Specific objectives:** | The European framework  
The main figures of the electricity generation in Spain  
The Spanish framework. The evolution of energy prices and their implications |

| **(ENG) Electricity production. Technical aspects** | **Learning time:** 7h 30m  
Theory classes: 3h 30m  
Self study: 4h |
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| **Specific objectives:** | Types and classification of power plants in the Ordinary Regime  
Types and classification of power plants in the Special Regime  
Operating principles  
Control and regulation |

| **(ENG) Management and control of power plants.** | **Learning time:** 40h  
Theory classes: 10h  
Laboratory classes: 15h  
Self study: 15h |
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| **Specific objectives:** | The electricity market and the management of power plants  
Simplified models for the management and control of power plants  
Conception and design of the control mechanisms associated to the power plants management  
Introduction to renewable power plants control |
(ENG) Introduction to the feasibility study of a renewable power plant

**Description:**
- *
- *

**Specific objectives:**
- Market study and implementation
- Technical feasibility study of the various options identified by means of the market study and implementation
- Economic feasibility study of the various options identified by means of the market study and implementation
- Evaluation of the projects. Selection and justification of the proposed solution

**Learning time:** 95h
- Theory classes: 28h
- Self study: 67h

**Qualification system**

The evaluation will be conducted by carrying out different projects (and/or tests) related to the contents of the subject. These projects (or tests) include the activity carried out in the laboratory. Within these associated activities one can find the generic skill that will have a weight of 10% from the total grade. The subject does not possess a reassessment process.

**Bibliography**

**Basic:**