Course guide
820122 - CEEREE - Power Plants and Renewable Energies

Unit in charge: Barcelona East School of Engineering
Teaching unit: 709 - DEE - Department of Electrical Engineering.

Degree: BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
Academic year: 2023  ECTS Credits: 6.0  Languages: Catalan, Spanish

LECTURER
Coordinating lecturer: JORGE DE LA HOZ CASAS
Others: Primer quadrimestre: JOSE MATAS ALCALA - Grup: T11, Grup: T12
Segon quadrimestre: ALEXANDRE ALONSO TRAVESSET - Grup: M11, Grup: M12, Grup: M13
JOSE MATAS ALCALA - Grup: M11, Grup: M12, Grup: 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

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Hours small group</td>
<td>15,0</td>
<td>10.00</td>
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<tr>
<td>Hours large group</td>
<td>45,0</td>
<td>30.00</td>
</tr>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
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Total learning time: 150 h

## CONTENTS

### (ENG) Introduction to the electricity production activity

**Description:**
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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

**Full-or-part-time:** 7h 30m
Theory classes: 3h 30m
Self study : 4h

### (ENG) Electricity production. Technical aspects

**Description:**
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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

**Full-or-part-time:** 7h 30m
Theory classes: 3h 30m
Self study : 4h

### (ENG) Management and control of power plants.

**Description:**
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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

**Full-or-part-time:** 40h
Theory classes: 10h
Laboratory classes: 15h
Self study : 15h
(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

Full-or-part-time: 95h
Theory classes: 28h
Self study: 67h

GRADING 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: