

## 820122 - CEEREE - Power Plants and Renewable Energies

Coordinating unit: 295 - EEBE - Barcelona East School of Engineering  
 Teaching unit: 709 - EE - Department of Electrical Engineering  
 Academic year: 2017  
 Degree: BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)  
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 ECTS credits: 6 Teaching languages: Catalan, Spanish

### Teaching staff

Coordinator: JORDI DE LA HOZ CASAS  
 Others: - MARIA ELENA MARTIN CAÑADAS

### Requirements

Sistemes Elèctrics  
 Màquines Elèctriques I

### 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

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>(ENG) Introduction to the electricity production activity</p>	<p>Learning time: 7h 30m Theory classes: 3h 30m Self study : 4h</p>
<p>Description: * *</p> <p>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</p>	
<p>(ENG) Electricity production. Technical aspects</p>	<p>Learning time: 7h 30m Theory classes: 3h 30m Self study : 4h</p>
<p>Description: * *</p> <p>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</p>	
<p>(ENG) Management and control of power plants.</p>	<p>Learning time: 40h Theory classes: 10h Laboratory classes: 15h Self study : 15h</p>
<p>Description: * *</p> <p>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</p>	

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<p>(ENG) Introduction to the feasibility study of a renewable power plant</p>	<p>Learning time: 95h Theory classes: 28h Self study : 67h</p>
<p>Description: * *</p> <p>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</p>	

### 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:

- El-Sharkawi, Mohamed A. Electric energy: an introduction. 2nd ed. Boca Raton: CRC Press, cop. 2009. ISBN 9781420062199.
- Carta González, José Antonio [et al.]. Centrales de energías renovables : generación eléctrica con energías renovables. Madrid: Pearson Educación, 2009. ISBN 9788483226001.
- Yazdani, Amirnaser; Iravani, Reza. Voltage-sourced converters in power systems : modeling, control, and applications. 2a. Hoboken, N.J.: Wiley, cop. 2010. ISBN 9780470521564.