

Course guide

820766 - CSE - Contract for the Supply of Energy

Last modified: 13/03/2025

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

Degree: MASTER'S DEGREE IN ENERGY ENGINEERING (Syllabus 2013). (Optional subject).

Academic year: 2025 **ECTS Credits:** 5.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Jordi de la Hoz Casas

Others: Helena Martín Cañadas
Jordi de la Hoz Casas

TEACHING METHODOLOGY

The course teaching methodologies are as follows:

- Lectures and conferences: presentation of knowledge by lecturers or guest speakers.
- Participatory sessions: collective resolution of exercises, debates and group dynamics, with the lecturer and other students in the classroom; classroom presentation of an activity individually or in small groups.
- Theoretical/practical supervised work (TD): classroom activity carried out individually or in small groups, with the advice and supervision of the teacher.
- Homework assignment of reduced extension: carry out homework of reduced extension, individually or in groups.
- Homework assignment of broad extension: design, planning and implementation of a project or homework of broad extension by a group of students, and writing a report that should include the approach, results and conclusions.
- Evaluation activities (EV).

LEARNING OBJECTIVES OF THE SUBJECT

Objectives

The aim of the course is to present the fundamentals associated with the procurement of energy supply to the student, providing them with sufficient knowledge to enable the student to understand the current framework and necessary tools to facilitate analysis in different contexts of the most beneficial types of contracts.

Learning outcomes

Upon completing the course, the student should:

- Know the legal framework associated with the procurement of energy supply
- Define the main problems associated with the procurement of energy supply
- Learn to formulate the main elements associated with the procurement of energy supply
- Know the main mechanisms for managing risk associated with the process of procuring energy supply
- Analyse the results obtained from the definition and formulation of problems associated with procuring energy supply

STUDY LOAD

Type	Hours	Percentage
Hours small group	30,0	24.00
Guided activities	15,0	12.00
Self study	80,0	64.00

Total learning time: 125 h

CONTENTS

1. Introduction

Description:

This module will introduce the students to the main ways of procuring energy supply, both in wholesale markets and retailers.

Specific objectives:

At the end of the module the student should know:

- What a supply contract is
- What the main options for procuring energy on the wholesale market are
- What the main options for procuring energy in the retail market are
- What the financial contracts in the electricity sector are

Related activities:

PA_1

Full-or-part-time: 12h

Theory classes: 2h

Self study : 10h

2. Definition of the problem of procurement of energy supply

Description:

This module aims to provide students with information associated with the main elements of the problem of procuring energy supply in order to clarify what the objective function is.

Specific objectives:

At the end of the module the student should know:

- What the energy costs are
- What a portfolio of contracts is
- What the problem of energy supply consists of
- What the objective function is

Related activities:

PA_1 and PA_2

Full-or-part-time: 27h

Theory classes: 2h

Guided activities: 5h

Self study : 20h

3. Formulation of the problem of procurement of energy supply

Description:

This module aims to provide students with the main notions associated with the formulation of the problem of procuring energy supply.

Specific objectives:

At the end of the module the student should know:

- How to draw schematically the main relationships associated with procuring energy supply
- The principles of the main elements of the system to analyse
- How to determine the energy balance of the system to analyse
- How to integrate and make all the elements associated with procuring energy supply (variable functions, constraints, objective function)

Related activities:

PA_1, PA_2 and PA_3

Full-or-part-time: 34h

Theory classes: 4h

Guided activities: 10h

Self study : 20h

4. Introduction to risk management

Description:

This module aims to provide students with the main notions regarding the risks associated with procuring energy supply.

Specific objectives:

At the end of the module the student should know:

- What the main risks associated with the procurement of energy supply are
- What the risk management models are
- How to integrate risk management into the procurement problem

Related activities:

PA_1, PA_2 and PA_3

Full-or-part-time: 2h

Theory classes: 2h

5. Integration of results

Description:

This module, with the help of the guided project, aims to deepen knowledge of the optimal energy management of a consumer integrating all the elements described above, providing a framework in which students apply the learned notions.

Specific objectives:

At the end of the module the student should know:

- What the problem or problems associated with the development of procuring energy supply is/are
- What the main characteristics and constraints of the problem are
- What the objective function is

Related activities:

PA_1, PA_2 and PA_3

Full-or-part-time: 50h

Theory classes: 5h

Guided activities: 15h

Self study : 30h

GRADING SYSTEM

Oral test (PO). 20%

Work performed individually or in groups (TR). 70%

Quality and performance of group work (TG). 10%

BIBLIOGRAPHY

Basic:

- Becker Zuazua, Fernando. Tratado de regulación del sector eléctrico. Primera. Navarra: Aranzadi, 2009. ISBN 9788483559024.
- Calancha Marzana, Fernando; Soler Tappa, Eduardo. Código comentado de la energía. Navarra: Aranzadi, 2010. ISBN 9788447035588.