

## Course guide

# 820770 - GEDAE - Energy Management, Diagnostics and Energy Audit

**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

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**Coordinating lecturer:** RICARDO BOSCH TOUS

**Others:** First semester:  
RICARDO BOSCH TOUS - T10, T30

### PRIOR SKILLS

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Knowledge of energy equipment material

## TEACHING METHODOLOGY

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).

Training activities:

The course training activities are as follows:

- Face to face activities
  - o Lectures and conferences: learning based on understanding and synthesizing the knowledge presented by the teacher or by invited speakers.
  - o Participatory sessions: learning based on participating in the collective resolution of exercises, as well as in discussions and group dynamics, with the lecturer and other students in the classroom.
  - o Presentations (PS): learning based on presenting in the classroom an activity individually or in small groups.
  - o Theoretical/practical supervised work (TD): learning based on performing an activity in the classroom, or a theoretical or practical exercise, individually or in small groups, with the advice of the teacher.
- Study activities
  - o Homework assignment of reduced extension (PR): learning based on applying knowledge and presenting results.
  - o Homework assignment of broad extension (PA): learning based on applying and extending knowledge.
  - o Self-study (EA): learning based on studying or expanding the contents of the learning material, individually or in groups, understanding, assimilating, analysing and synthesizing knowledge.

## LEARNING OBJECTIVES OF THE SUBJECT

Objectives

Understand and be able to develop diagnostics and energy audits in processes and facilities for optimal energy management.

Learning outcomes

Upon completing the course, the student should:

- Understand the role of tools for managing the demand in context of the global and regional energy system and regional connotations in their economic, social and environmental impact and associated technologies in a local and global context.
- Know the relevant organisations and their main projects at the international level, the main sources of information and regulations related with the tools for managing demand.
- Have the elements of analysis and knowledge necessary to carry out projects related with the tools for managing demand.
- Be able to propose transferable results - the application of tools for managing demand - through the development of innovative ideas.

## STUDY LOAD

Type	Hours	Percentage
Hours small group	30,0	25.00
Guided activities	10,0	8.33
Self study	80,0	66.67

**Total learning time:** 120 h

## CONTENTS

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### Introduction

**Description:**

- Energy accounting
- Statistics on energy

**Specific objectives:**

Introduce the link between economics and energy.

**Full-or-part-time:** 6h

Theory classes: 2h

Self study : 4h

### Diagnosis and energy audit

**Description:**

- Energy diagnosis
- Energy audit
- Tools for energy management
- Modelling and simulation of energy resources
- Evaluation of technical feasibility

**Specific objectives:**

Learn the tools to perform an optimal energy management.

**Related activities:**

Diagnosis and energy audit: case study

**Full-or-part-time:** 119h

Theory classes: 18h

Practical classes: 10h

Guided activities: 15h

Self study : 76h

## ACTIVITIES

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### Diagnosis and energy audit: case study

**Description:**

Activity carried out in groups to make a case study of a diagnosis and energy audit.

**Specific objectives:**

Realisation of a practical case study.

**Material:**

Class notes, references.

**Delivery:**

Report with the tasks performed.

**Full-or-part-time:** 119h

Theory classes: 12h

Self study: 76h

Practical classes: 16h

Guided activities: 15h

## GRADING SYSTEM

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Written test (PE). 60%

Work performed individually or in groups (TR). 40%