

## Course guide

### 310507 - 310507 - Building Energy Management

Last modified: 05/12/2023

**Unit in charge:** Barcelona School of Building Construction  
**Teaching unit:** 758 - EPC - Department of Project and Construction Engineering.

**Degree:** MASTER'S DEGREE IN BUILDING CONSTRUCTION MANAGEMENT (Syllabus 2015). (Compulsory subject).

**Academic year:** 2023    **ECTS Credits:** 5.0    **Languages:** Spanish

#### LECTURER

**Coordinating lecturer:** Gangolells Solanellas, Marta

**Others:** Blanca Tejedor

#### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

**Specific:**  
CE15MUGE. Building energy manage and apply improvements in energy efficiency and for reduce operating costs

#### TEACHING METHODOLOGY

The methodology includes:

- Lectures
- Practical sessions
- Self-study

#### LEARNING OBJECTIVES OF THE SUBJECT

At the end of the subject, students will be able to detect, analyse and take decisions related to improving the energy efficiency of existing buildings. The subject will provide knowledge, skills and competences needed to implement energy management systems, to conduct energy audits and to identify technically and economically viable energy efficiency measures. The subject will also provide knowledge, skills and competences to understand the energy market and the operation of Energy Saving Companies.

#### STUDY LOAD

Type	Hours	Percentage
Hours large group	17,5	14.00
Self study	90,0	72.00
Guided activities	7,5	6.00
Hours small group	5,0	4.00
Hours medium group	5,0	4.00

**Total learning time:** 125 h

## CONTENTS

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### ISO 50001 energy management system

**Description:**

- Introduction, goal and scope
- General Requirements
- Management Responsibility
- Energy Policy
- Energy Action Plan
- Implementation and operation
- Performance Audits
- Management Review

**Full-or-part-time:** 41h 40m

Theory classes: 5h 50m

Practical classes: 1h 40m

Laboratory classes: 1h 40m

Guided activities: 2h 30m

Self study : 30h

### Energy audits

**Description:**

- Introduction
- Legal framework
- Methodology
- Planning
- On-site monitoring
- Energy assessment
- Identification of energy efficiency measures and economic analysis
- Energy results and final report

**Full-or-part-time:** 41h 40m

Theory classes: 5h 50m

Practical classes: 1h 40m

Laboratory classes: 1h 40m

Guided activities: 2h 30m

Self study : 30h

### Energy market and Energy Service Companies

**Description:**

- Introduction to the electricity market
- Electricity bill
- Electricity tariffs
- Introduction to the gas market
- Gas bill
- Gas tariffs
- Other fuels
- Introduction to Energy Service Companies
- Energy Supply contracting and energy performance contracting
- Performance verification
- Case studies

**Full-or-part-time:** 41h 40m

Theory classes: 5h 50m

Practical classes: 1h 40m

Laboratory classes: 1h 40m

Guided activities: 2h 30m

Self study : 30h

### GRADING SYSTEM

The qualification system contemplates three types of evaluative tests

WE: Written exam (week 15)

TW: Team work (week 6 and week 14)

CA: Class activities

Taking into account the weight distribution of each evaluative test, the final grade for the subject is calculated as:

$$NF = 30\% WE + 35\% TW + 35\% CA$$

Unsatisfactory results on the Written Exam (WE) may be redirected through the final exam scheduled by EPSEB in January. All enrolled students have the right to improve their grade. Final exam grades can range from 0 to 10. It should be noted that only the best grade will be considered.

### BIBLIOGRAPHY

**Basic:**

- Asociación Española de Normalización y Certificación. UNE-EN ISO 50001 : sistemas de gestión de la energía : requisitos con orientación para su uso. Madrid: Aenor, 2011.
- Norma UNE-EN 16247-2. Auditorías energéticas. Parte 2 : Edificios. Madrid: AENOR, 2014.
- Norma UNE-EN 16247-1 Auditorías energéticas. Parte 1: Requisitos generales. Madrid: AENOR, 2014.
- Krarti, Moncef. Energy audit of building systems : an engineering approach. 2nd ed. Boca Raton, FL: CRC Press, 211. ISBN 978-1439828717.