

## Course guide

# 240267 - 240AU123 - Infrastructure and Electric Charging Systems

Last modified: 13/06/2023

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

**Degree:** MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2014). (Optional subject).  
MASTER'S DEGREE IN AUTOMOTIVE ENGINEERING (Syllabus 2019). (Optional subject).

**Academic year:** 2023    **ECTS Credits:** 4.5    **Languages:** Catalan, Spanish

### LECTURER

**Coordinating lecturer:** Villafáfila Robles, Roberto

**Others:**

### PRIOR SKILLS

Electrotechnology background.

### TEACHING METHODOLOGY

Lectures and individual work to be developed by the student to assimilate the knowledge.

### LEARNING OBJECTIVES OF THE SUBJECT

Understand technical requirements of electric vehicle charging installations.  
Sizing and define management strategies for charging installations.

### STUDY LOAD

Type	Hours	Percentage
Self study	72,0	64.00
Hours medium group	27,0	24.00
Hours small group	13,5	12.00

**Total learning time:** 112.5 h

## CONTENTS

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### Introduction

**Description:**

Charging infrastructure.  
Electrotechnology review.

**Specific objectives:**

Know the state of the art of charging infrastructure for electric vehicles.  
Review concepts of electrotechnology.

**Full-or-part-time:** 16h 30m

Practical classes: 7h

Laboratory classes: 1h 30m

Self study : 8h

### Design of charging infrastructure

**Description:**

Sizing electrical installation.  
Electrical protections.

**Specific objectives:**

Understand the criteria to be taken into account for the design of electrical installations for charging electric vehicles and the requirements regarding the required protections.

**Related activities:**

Design of a charging installation

**Full-or-part-time:** 48h

Practical classes: 10h

Laboratory classes: 6h

Self study : 32h

### Control of charging installation

**Description:**

Electricity markets and contracting.  
Demand management.

**Specific objectives:**

Understand the operation of the electric market and electrical contracting.  
Understand demand management mechanisms.

**Related activities:**

Control of electric vehicle charging installation (designed in the previous activity)

**Full-or-part-time:** 48h

Practical classes: 10h

Laboratory classes: 6h

Self study : 32h

## GRADING SYSTEM

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There are two individual assignments, corresponding to each of the main subjects of the course, and each has a weight of 50% of the final grade.

Each assignment consists of a report and a presentation. The report weights 70% and the presentation 30%.

If both reports are not delivered and the two presentations are not made, the subject will not be evaluated.

## EXAMINATION RULES.

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The activities are individual and have to follow the approach proposed by the teacher.

## RESOURCES

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### Audiovisual material:

- Nom recurs. Resource

### Other resources:

- Reglamento Electrotécnico para Baja Tensión– REBT de 2002 (BOE 18/09/02)
- ITC-BT-52. Instalaciones con fines especiales. Infraestructura para la recarga de vehículos eléctricos (BOE 31/12/14)
- Instal·lació d'infraestructura de recàrrega del vehicle elèctric. Col·lecció Quadern Pràctic, nº 9 (3a edició 2019)