Course guide
240267 - 240AU123 - Infrastructure and Electric Charging Systems

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: 2022  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.

During the fall semester of the 2020-2021 academic year, and as a result of the health crisis due to Covid19, the qualification method will be:
- The number of evaluation activities and their weights are kept in the calculation of the final grade.
- The teaching methodology is adapted to the situation mentioned as follows:
  - Lectures will be held on-line synchronously at defined times.

LEARNING OBJECTIVES OF THE SUBJECT

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

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Hours medium group</td>
<td>27,0</td>
<td>24.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>13,5</td>
<td>12.00</td>
</tr>
<tr>
<td>Self study</td>
<td>72,0</td>
<td>64.00</td>
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</tbody>
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Total learning time: 112.5 h
CONTENTS

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

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

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