

29640 - Electric Mobility

Syllabus Information

Academic Year: 2021/22

Subject: 29640 - Electric Mobility

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 430 - Bachelor's Degree in Electrical Engineering

ECTS: 6.0

Year: 4

Semester: First semester

Subject Type: Optional

Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The learning process that has been designed for this subject is based on the following:

The learning methodology will be based on theoretical and practical classes.

Lectures are complemented with simulation practice classes, using computer programs for electric modeling and electromagnetic field modeling.

Students do several jobs throughout the course to deepen their knowledge of various topics.

4.2. Learning tasks

The program offered to the student to help him achieve the expected results includes the following activities:

Lectures (45 classroom hours)

Sessions of reasoned explanation of contents. Student participation will be encouraged through short questions and discussions.

Problems and use cases will also be developed with the participation of the students, coordinated at all times with the theoretical contents. The student is encouraged to work the problems beforehand. Students expose some of their work to the rest of their classmates, to improve their expression skills and discuss the ideas presented. In the case of not being able to expose their work in the classrooms, it will be done online.

Laboratory (15 hours).

Simulation practices will be carried out in which the student will design an electric vehicle model checking its operation in different circumstances. Various electric vehicle charging equipment will be shown: conductive and inductive that will be used by students. In the case of not being able to teach in the laboratory all the practice classes will be made by computer online.

Supervised works

Exercises and use cases to be developed on their own will be proposed periodically to the student. This section also includes the preparation of laboratory practices and additional activities.

Evaluation

The evaluation is part of the learning process with which the student verifies the degree of understanding and assimilation that has been achieved, for this the works are evaluated, part of which is exposed in public by the students, in addition to a written exam of 2 hours of duration.

Tutorials

Personalized attention to the student, identification of learning problems, orientation in the subject, attention to exercises and work. The tutoring will take place in the teacher's office, if this is not possible it will be done online

4.3. Syllabus

The course will address the following learning tasks:

- History of the Electric Vehicles
- Electric Vehicle need
- Low emission vehicles: micro-hybrid, semi-hybrid, hybrid, plug-in hybrids, hydrogen, compressed air
- Electric vehicle: advantages and disadvantages, structure, batteries, motors, power converters
- Electric vehicle charging: standards, slow charging, fast charging, induction charging, V2G, grid impact,
- Integration into smart cities
- Electric vehicle modeling

4.4. Course planning and calendar

Calendar of class sessions and presentation of papers

The lectures and problems and practice sessions in the laboratory (or online) are taught according to the schedule established by the center and is published prior to the start date of the course (eina.unizar.es).

Each teacher will report their tutoring attention schedule.

The rest of the activities will be planned according to the number of students and will be announced well in advance.

The detailed calendar of the different activities will be established once the University has approved the academic calendar (which can be consulted on the center's website).

The list of activities and their date, together with all kinds of information and documentation, will be published in the subject's web space (Note: to access this website the student must be enrolled).

4.5. Bibliography and recommended resources

The teacher will make available to the student the necessary documentation for the follow-up of the classes.

Likewise, scientific articles, reports and related regulations are provided so that the student can deepen the knowledge of the subject

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=29640&Identificador=15366>