Course guide
220045 - PHEV - Plug-In Hybrid Electric Vehicles. Concept, Design and Project of Electric Propulsion Systems

Last modified: 11/04/2025

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 709 - DEE - Department of Electrical Engineering.

Degree: BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Optional subject).
BACHELOR'S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Optional subject).
BACHELOR'S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Optional subject).

Academic year: 2025 **ECTS Credits:** 3.0 **Languages:** English

LECTURER

Coordinating lecturer: ANTONIO GARCIA ESPINOSA

Others: SANTIAGO BOGARRA RODRIGUEZ - JORDI ROGER RIBA RUIZ

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. The ability to calculate and design electrical machines

TEACHING METHODOLOGY

The course is divided into parts:

Theory classes
Practical classes
Self-study for doing exercises and activities.

In the theory classes, teachers will introduce the theoretical basis of the concepts, methods and results and illustrate them with examples appropriate to facilitate their understanding.

In the practical classes (in the classroom), teachers guide students in applying theoretical concepts to solve problems, always using critical reasoning. We propose that students solve exercises in and outside the classroom, to promote contact and use the basic tools needed to solve problems.

Students, independently, need to work on the materials provided by teachers and the outcomes of the sessions of exercises/problems, in order to fix and assimilate the concepts.

The teachers provide the curriculum and monitoring of activities (by ATENEA).

LEARNING OBJECTIVES OF THE SUBJECT

To know the technologies involved in the electrical traction systems
Electric Drive Train Design
To know the interaction between the hybrid vehicle and the electrical power system.

STUDY LOAD

Type	Hours	Percentage
Hours large group	30,0	40.00
Self study	45,0	60.00

Total learning time: 75 h

CONTENTS

Module 1: Electrical Propulsion Systems and Electric Drive Train Design

Full-or-part-time: 75h
Theory classes: 30h
Self study : 45h

GRADING SYSTEM

The final grade depends on the following assessment criteria:

- Electrical power train design: 50 %
- Final Exam: 50 %

BIBLIOGRAPHY

Basic:
- Miller, T. J. E. Electronic control of switched reluctance machines. Oxford: Newnes, 2001. ISBN 0750650737.