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

**Coordinating unit:** 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering

**Teaching unit:** 709 - EE - Department of Electrical Engineering

**Academic year:** 2017

**Degree:**
- BACHELOR'S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Teaching unit Optional)
- BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Optional)
- BACHELOR'S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Optional)

**ECTS credits:** 3

**Teaching languages:** Catalan, Spanish, English

**Teaching staff**

**Coordinator:** 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.
220045 - Plug-In Hybrid Electric Vehicles. Concept, Design and Project of Electric Propulsion Systems

Study load

<table>
<thead>
<tr>
<th>Total learning time: 75h</th>
<th>Hours large group: 30h</th>
<th>40.00%</th>
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<tbody>
<tr>
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<td>Self study: 45h</td>
<td>60.00%</td>
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Content

Module 1: Electrical Propulsion Systems and Electric Drive Train Design

Learning time: 75h
- Theory classes: 30h
- Self study: 45h

Qualification system

The final grade depends on the following assessment criteria:

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

Bibliography

Basic: