

Course guide

220120 - 220120 - Automobile Electronics

Last modified: 11/04/2025

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 710 - EEL - Department of Electronic Engineering.

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

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

LECTURER

Coordinating lecturer: DAVID GONZALEZ DIEZ

Others:

TEACHING METHODOLOGY

Theory classes: In this lectures, teachers will introduce basic concepts of system operation and description of components. Special attention will be paid to system modeling and simulation (MATLAB/Simulink). All these explanations are system oriented and they will be illustrated with real examples to facilitate their understanding.

Self-study: Students need to work on the tasks assigned by teachers in order to develop solutions according to the problem requirements. These tasks will be focused in the modeling and simulation of a given system.

Students will be asked to prepare written reports of the assigned tasks related to Modules 2 and 3.

Teachers provide the curriculum and monitoring of activities through ATENEA.

LEARNING OBJECTIVES OF THE SUBJECT

This course gives an introductory overview of electronic systems in a modern car. It covers a description components, system architecture and operation. The course also considers the modeling and simulation of these systems. At the end of the course, students should be able:

- to know the basics principles, components and operation of electronics systems in a car
- to model and simulate the performance of these systems

STUDY LOAD

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

Total learning time: 75 h

CONTENTS

Module 1: Introduction to Car electronics

Description:

Role of electronics in a modern car.
Description of systems architecture. Modeling tools.

Related activities:

Final exam.

Full-or-part-time: 12h 30m

Theory classes: 5h
Self study : 7h 30m

Module 2: Systems of driving assistance

Description:

This module deals with systems of driving assistance such as Anti Block System (ABS) or Anti Slip System (ASS), covering basic systems description, operation and simulation.

Related activities:

Homework related to Module 2
Final exam.

Full-or-part-time: 25h

Theory classes: 10h
Self study : 15h

Module 3: Systems of engine management

Description:

This module deals with systems of engine management and monitoring, such as Electronic Fuel Injection, covering basic systems description, operation and simulation.

Related activities:

Homework related to Module 3
Final exam.

Full-or-part-time: 25h

Theory classes: 10h
Self study : 15h

Module 4: Communications between systems. Introduction to CAN bus

Description:

This module introduces the CAN bus. Main features and characteristics of CAN bus. Examples of application.

Related activities:

Final exam.

Full-or-part-time: 12h 30m

Theory classes: 5h
Self study : 7h 30m



GRADING SYSTEM

The final grade depends on the following assessment criteria:

- Homework related to Module 2, weight: 25 %
- Homework related to Module 3, weight: 25 %
- Final exam, weight: 50 %

Any student who wishes to improve his grade may try it at the exam planned at the end of the course. The best note is preserved