

Course guide

330544 - CSE - Safe and Efficient Driving

Last modified: 04/05/2023

Unit in charge: Manresa School of Engineering
Teaching unit: 750 - EMIT - Department of Mining, Industrial and ICT Engineering.

Degree: BACHELOR'S DEGREE IN AUTOMOTIVE ENGINEERING (Syllabus 2017). (Optional subject).

Academic year: 2023 **ECTS Credits:** 3.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Jordi Vives Costa

Others: Instructors i supervisors del Circuit de Can Padró
Jordi Vives Costa

TEACHING METHODOLOGY

MD1 Master class or conference (EXP)
MD3 Practical activities (TP)
MD5 Project, activity or reduced work (PR)
MD7 Evaluation activities (EV)

LEARNING OBJECTIVES OF THE SUBJECT

The course aims to provide theoretical and practical knowledge in order to be able to drive cars optimized from the point of view of guaranteeing safety standards and, at the same time, allowing energy efficiency objectives to be achieved. The course contains a practical component that will be developed at the Can Padró Circuit.

STUDY LOAD

Type	Hours	Percentage
Hours large group	15,0	25.00
Self study	45,0	75.00

Total learning time: 60 h



CONTENTS

Safe Driving

Description:

Driving posture. Ergonomics.
Distractions (GPS, mobile).
Alcohol, drugs and medications.
Reaction time.
Frontal, rear and lateral distances.
Vehicle maintenance. Tyres, lights, brakes, suspension.
Speed and braking distance.
Principles of vision.
Stress and its management.
Fatigue and tiredness. The phases of fatigue. The biological clock.

Specific objectives:

Theory of driving position and access to controls.
Theory of the position of the hands on the steering wheel.
Slalom theory.
The importance of weight and centre of gravity in the behaviour of the vehicle.
Practical slalom techniques.
Theory of skidding correction. Understeering and oversteering.
Practical techniques of skid correction, with under-steer and over-steer.
Theory of emergency braking, with and without ABS.
Theory of cornering. Study of the phases of braking and acceleration in the trajectory.
Practical techniques for the layout of bends.

Related activities:

Activity 1
Activity 2
Activity 3

Full-or-part-time: 41h

Theory classes: 8h
Practical classes: 5h
Self study : 28h



Efficient Driving

Description:

The keys to efficient driving.

Energy consumption and environmental pollution.

The car as a consumption machine. The engine, the fuel, the transmission, the wheels.

Variables that affect consumption. The resistance to the vehicle's advance.

The effect of accessories. Air conditioning, windows, vehicle loading, other accessories.

Preventive maintenance.

Specific objectives:

Energy efficiency.

Start-up.

The choice of driving gear.

Rational driving and anticipation.

Driving and speed.

Sloping sections.

The curves.

Caravan driving.

Entering and leaving the tracks.

Stopping while driving.

Obstacles to overcome while driving.

Self-assessment of efficient driving.

Related activities:

Activity 1

Activity 2

Activity 3

Full-or-part-time: 34h

Theory classes: 3h

Practical classes: 2h

Self study : 29h

GRADING SYSTEM

Activity 1: 40%

Activity 2: 40%

Activity 3: 20%

RESOURCES

Other resources:

Notes available on the ATENEA digital campus