

## 30054 - Mechanical Systems in Machines and Vehicles

### Syllabus Information

**Academic year:** 2024/25

**Subject:** 30054 - Mechanical Systems in Machines and Vehicles

**Faculty / School:** 110 - Escuela de Ingeniería y Arquitectura

**Degree:** 436 - Bachelor's Degree in Industrial Engineering Technology

**ECTS:** 6.0

**Year:** 4

**Semester:** Second semester

**Subject type:** Optional

**Module:**

### 1. General information

This subject is taught in the Intensification of Machines and Vehicles. Its contents aim to develop in the students, the ability to carry out calculations, analysis and selection of mechanical systems in Machines and Vehicles, in particular:

Solve physical problems and their approach by analysing the interaction with reality, applying the theoretical and practical knowledge acquired.

Be able to carry out analysis of each of the cases that arise when designing mechanical systems in machines and vehicles

### 2. Learning results

1. Characterizes and calculates brake, transmission, variable speed drives and spring systems.
2. Designs and calculates vehicle systems, components and elements.
3. Knows and applies the principles of Vehicle and Machine Systems Analysis and Calculation.
4. Knows and applies the regulations applicable to vehicles.
5. Knows and understands the fundamental principles on which the general mechanical systems and main elements of vehicles are based
6. Knows and understands the interaction between mechanical systems, the vehicle and its environment.
7. Understands the characteristics of the different types of mechanical systems and vehicles and their adaptability for the transport of people and goods
8. Knows the advantages and disadvantages of the use of different materials in mechanical systems, as well as the constructive aspects involved in the use of one or the other.

### 3. Syllabus

#### **Block I: Automotive Mechanical Systems**

1. Automotive mechanical systems
2. Regulations

#### **Block II: Mechanical Systems in Machines**

1. Mechanics, pneumatics and oil-hydraulics
2. Brakes and clutches
3. Gearboxes and variable speed drives, belt drive and power screws and pulleys.
4. Calculation and sizing of springs

### 4. Academic activities

Attendance to all learning activities is of special relevance to acquire the competencies of the subject.

- **Theory classes and problems** (45h)
- **Laboratory Practices** (12h)
- **Seminar** (3h)
- Other activities: **Tutoring**.

### 5. Assessment system

In each one of the calls there will be a written test of global evaluation which may include both theoretical and practical questions and problems

In the joint global evaluation test of the subject, each of the blocks will have a weight of 50% of the total grade  
The subject is passed with an overall grade of 5 out of 10.

## **6. Sustainable Development Goals**

- 8 - Decent Work and Economic Growth
- 9 - Industry, Innovation and Infrastructure
- 12 - Responsible Production and Consumption