

## 60808 - Transportation and industrial handling

### Syllabus Information

**Academic year:** 2024/25

**Subject:** 60808 - Transportation and industrial handling

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

**Degree:** 532 - Master's in Industrial Engineering

**ECTS:** 4.5

**Year:**

**Semester:** First semester o Second semester

**Subject type:** Compulsory

**Module:**

### 1. General information

The objective of the subject is for the student to integrate the knowledge that is taught in it. The content of the subject is related to lifting and transport devices, within the educational context of the degree, so that students have a solid training in the subject, which allows them not only to know the methods and means of transport, but also to design them using modern calculation techniques. In this way, throughout the exercise of their profession, when faced with problems regarding the optimisation of transportation systems in a company's manufacturing chain or the calculation of components of the elevators to be used in a building, students will be self-sufficient in applying the knowledge to solve these problems.

These approaches and objectives are aligned with some of the Sustainable Development Goals, SDGs, of the 2030 Agenda ( <https://www.un.org/sustainabledevelopment/es/> ). Specifically, the learning activities planned in this subject will contribute to the achievement of Objectives 4.4, 7.3, 9.1, 9.4 and 12.5, and of Goals 4, 7, 9 and 12.

### 2. Learning results

To know the methods of transportation and cargo handling in the industry.

To know which method is most suitable for the transportation and handling of loads.

To know how to design and calculate the elements of industrial transport and handling systems.

To know how to design and calculate the devices of industrial transport and handling systems.

To know how to design and calculate the elements of hydraulic and electric elevators.

To know regulations and their application.

### 3. Syllabus

The following learning modules are proposed:

1. Module 1: *Industrial conveyors*
2. Module 2: *Cranes: Components and devices*
3. Module 3: *Electric and hydraulic elevators*

In this subject, the different groups of devices and the generic functions they must perform are first described. Likewise, the different elements that make up the total set are presented, indicating how they should be coupled in order to achieve the required performance for each case. Design and calculation problems are carried out for each component of the explained lifting and transport systems. Finally, the theoretical master classes where these devices are defined are complemented by a practical program, focused on practical cases of design, calculation and optimization of the lifting and transport devices studied in the subject, through easy-to-use computer programs, developed in the area of Engineering and Infrastructure of Transport. Through the computer solving of cases, the student will learn how the different variables involved in the design influence the final result. In order to achieve optimal constructive concepts of lifting and transport devices for an analysed application, the implementation of sensitivity studies of the independent variables of the calculation is proposed. A practice program has been developed. It includes 3 practices of 3 hours duration, which will deal with the topics to be taught in the subject's program. In addition, the students will work in groups and with real data, so they will also develop team collaboration skills in solving real problems.

### 4. Academic activities

The subject is structured with 36 hours of face-to-face classes during the 15 weeks of the term. In them, the complete group is given the description of the transport systems studied, the calculation and design procedures are explained, and practical problems are solved. Another 9 hours are taught to small groups, usually in the computer lab, to develop skills in solving real problems and interpreting the results.

A 01 Master Class 20 100

A 02 Problem solving and cases 10 100

A 03 Laboratory practices 9 100

- A 04 Special practices 1 100
- A 05 Practical application or research work 6.5 0
- A 06 Personalized student-teacher tutored work 4 100
- A 07 Study of theory 58 0
- A 08 Assessment Tests 4 100

## 5. Assessment system

### CONTINUOUS ASSESSMENT

1. A written test carried out during the teaching period of the subject, on the *Industrial transportation and handling systems* module. ( *Industrial transporters and cranes* )
2. A written test carried out in the official call for the subject, referring to the *Vertical Transport* module. ( *Electric and hydraulic elevators* ).
3. An individual report that reflects on the one hand, the work carried out during the subject's practical exercises, and, on the other hand, demonstrates the student's problem-solving ability in calculation and design related to the cases presented in the subject's practical exercises, to be submitted before the official call.

### GLOBAL TEST

The second written test of the continuous assessment will coincide with the global test of the subject.

#### Assessment criteria:

In the evaluation of both the exam and the report, the following aspects will be considered:

- The problem must be correctly stated and solved.
- Students must correctly define the variables used in the proposed problem.
- Serious errors in basic concepts of the subject will result in the cancellation of the score awarded to the question or problem.

#### Levels of demand:

The first of the two written tests accounts for 48% of the final grade and the second one for 32%; in order to exceed the 80% that both represent, the student must obtain a grade of at least 4 (out of 10) in each of them and an average of at least 5 points (out of 10).

The report on the practices of the subject and the solving of the cases presented in them by calculation will account for 20% of the final grade. The student must obtain a grade of at least 5 points out of 10 in these activities.

To pass the subject, the student must obtain a final grade of at least 5 points, out of 10.

The global test will be a written test equivalent to those described.

On the other hand, the second evaluation call will be carried out through a comprehensive test conducted in the period established for this purpose in the academic calendar.

## 6. Sustainable Development Goals

- 7 - Affordable and Clean Energy
- 9 - Industry, Innovation and Infrastructure
- 12 - Responsible Production and Consumption