

30154 - Metallic Structures

Syllabus Information

Academic Year: 2021/22

Subject: 30154 - Metallic Structures

Faculty / School: 179 - Centro Universitario de la Defensa - Zaragoza

Degree: 563 - Bachelor's Degree in Industrial Organisational Engineering

ECTS: 6.0

Year: 4

Semester: First semester

Subject Type: Optional

Module:

1. General information

1.1. Aims of the course

The expected results of the subject must be:

The student must:

- Have a general view about metal structure and its applications in building.
- Know how to apply Spanish regulations to structural elements and their unions.
- Be able to perform the design, sizing and testing of steel structures.

These objectives are aligned with the following Sustainable Development Goals (SDG) of the United Nations 2030 agenda (<https://www.un.org/sustainabledevelopment/es/>), in such a way that the acquisition of the results of Learning of the subject provides the ability and competence to contribute to some extent to its achievement.

- Industry, innovation and infrastructures.

1.2. Context and importance of this course in the degree

The subject is a part of the Structures and Materials Optional Module, specific to the IOI Defense Profile. It is part of the training that the student receives to be part of the Engineers branch.

It is one of the possible extensions of the Structures Calculation subject.

This subject contributes to the training of Army Officers, providing knowledge about the behavior of structural steel that will allow

1.3. Recommendations to take this course

To deal with the study of this subject, pupils must have previous knowledge of materials (properties and behavior of steel, relationship tension-strain etc.), mechanics (Static), resistance of materials (Efforts, relationship between stress and deformation). It is also necessary some domain of differential and integral calculus, resolution of equations systems and working with matrix . It would be desirable to have previously studied the subject "Calculation of Structures". It is important to attend classes, daily study and realization of the proposed exercises .

2. Learning goals

2.1. Competences

C02 - Ability to plan, budget, organise, manage and monitor tasks, people and resources.

C04 - Ability to solve problems and take decisions with initiative, creativity and critical reasoning.
C06 – Ability to communicate knowledge and skills in Spanish.
C09 – Ability to work in a multidisciplinary group and in a multilingual setting.
C11 – Ability to continue learning and develop self-learning strategies.
C60 –Gaining the necessary competence to calculate elementary architectural constructions.
C66 –Knowledge of the basic theories and technologies to project and calculate metallic structures.

2.2. Learning goals

The student, to pass this subject, must demonstrate the following results ...

Define qualitatively the resistant response mechanisms in metal structure elements.

Design and execute metal structures according to Spanish regulations.

Describe in a basic way the behavior of metallic structures.

Describe in a general way the characteristics of other types of special alloys and their applications.

2.3. Importance of learning goals

The learning results are part of the competences that the student must acquire as part of their training in the

They provide a knowledge of the behavior of metallic structures, present as a resistant element supporting ar

They will help the future officer of Engineers branch solve problems in their professional future through the u

3. Assessment (1st and 2nd call)

3.1. Assessment tasks (description of tasks, marking system and assessment criteria)

The student must demonstrate that he has achieved the expected learning goals through the following evaluat

A continuous assessment is proposed (that the student must follow) and two official calls. The continuous eva

The qualification in continuous evaluation will be distributed as follows:

-Media of the partial exams of each part: 60% .

-Qualification of the practice evaluation test: 25%.

-Qualification of public exhibitions and their previous work: 15%.

To pass the continuous evaluation, each of the three parts must obtain at least a score of 4 points and have

The student who does not pass the continuous evaluation must attend the first call. The final score of the stu

The student who does not pass the continuous evaluation and the first call must attend the second call. The f

All the exams may contain theoretical and practical questions with open-answer or multiple-choice and problems. Errors in mu

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

If this teaching could not be done in person for health reasons, it would be done telematically.

The learning process that is designed for this subject is based on the following:

The course is planned to facilitate continuous and active student learning. Learning resources to be used to:

- Theory sessions given by teacher to whole group. In these, theoretical concepts of the subject will be illustrated.
- Practice sessions. In these classes, the contents of the theory sessions are strengthened by performing careful calculations.
- Tutorials In which the student will be helped to solve the doubts raised during learning.
- Other Learning activities scheduled.

4.2. Learning tasks

The course includes the following learning tasks:

- Theory sessions.
- Practice sessions.
- Classes about problems of the subject.
- Group work sessions.
- Tutorials.
- Conferences given by invited staff.
- Visits to field work.

4.3. Syllabus

The course will address the following topics:

- Calculation bases.
- Structural safety.
- The resistance of the sections.
- The resistance of the bars.
- Welded joints.
- Bolted joints.

4.4. Course planning and calendar

The available class sessions will be distributed in theoretical sessions, taught by the teacher, computer practices and public presentations by students about topics related to the contents of the subject. To help achieve the necessary skills in English, these presentations will be held in English.

The evaluation of the subject will be based on several exams, evaluation of practices and public presentations.

In addition, students who don't pass such evaluation, two final exams will be held in official competitions.

If possible, a visit to work will be made. This activity is common to the three subjects of the module. Lectures given by invited staff can be scheduled too.

Key dates will be announced by the teacher, both in class and through the platform Moodle support.

4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=30154>