

Academic Year/course: 2022/23

29717 - Strength of Materials

Syllabus Information

Academic Year: 2022/23

Subject: 29717 - Strength of Materials

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 330 - Complementos de formación Máster/Doctorado
434 - Bachelor's Degree in Mechanical Engineering

ECTS: 6.0

Year: 434 - Bachelor's Degree in Mechanical Engineering: 2
330 - Complementos de formación Máster/Doctorado: XX

Semester: Second semester

Subject Type: 434 - Compulsory

330 - ENG/Complementos de Formación

Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The course will be developed from the following activities:

- Lectures (theory and problems). The theory constitutes the central teaching nucleus, since it serves to develop the scientific body in the course. Although, the followed technique in the explanation of theoretical concepts is mainly expository, is made an attempt to complement it with explanatory examples that reinforce its understanding. Likewise, and without a continuity solution, solving problems are proposed, allowing the student to apply theoretical concepts to solve problems in engineering practice. These problems help to develop competencies such as the application of specific empirical formulas, use of tables, etc. To check the degree of achievement of these classes, in some cases, at the end of them, tests related to the explanations can be performed.
- Lab computer sessions. In this way, the objective is to familiarize students with another of the basic tools of the subject, such as calculation and numerical simulation. The principal reason of these practices is that the student become able to interpret the results obtained using the computer, being able to discern whether they are right or not.
- Coursework. It aims to develop the project-based learning method, to reinforce the other teaching activities, together with the simulation practices.
- Tutorials. Allows, in a more individualized way, that students reinforce the explained contents and consolidate the object of their learning. The tutorials are, therefore, a complement to the lectures.

4.2. Learning tasks

Attendance at all learning activities is especially relevant to acquire the skills of the subject, so it is advisable to continue attending them with advantage.

The learning activities used are:

- Lectures.
- Practice sessions.
- Lab computer sessions.
- Coursework.
- Tutorials.

To encourage continued work with use in these activities, several techniques are proposed:

- Possible tests at the end of the theory and / or practice sessions.
- Delivery of reports at the end of the practices.
- Delivery of intermediate results in the different phases of the coursework.

4.3. Syllabus

The course will address the following topics:

1. Introduction to the strength of materials.
2. Bars under tension and compression.
3. Bars subjected to torsion.
4. Bars subjected to bending.
5. Bars subjected to buckling.
6. Introduction to the elasticity.

4.4. Course planning and calendar

Lectures (theory and problems) and practice sessions are taught according to the calendar and schedules established by the university center, which are published before the course start date.

Each teacher will report their tutorials hours.

Class and exam periods are collected in the official academic calendar.

The schedules of lectures and practice sessions, as well as the places where they are taught are available on the website of the School of Engineering and Architecture (eina.unizar.es), where you can also find the dates of the official exam calls.

The rest of the relevant information will be communicated to the students in well advance. The main milestones are:

- At the end of every practices session each student must submit a report with the respective result.
- There will be a coursework throughout the semester that may have several partial deliveries that will be announced in advance.

4.5. Bibliography and recommended resources

The updated bibliography is in the BR of the BUZ: <http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=29717>