

29821 - Strenght of Materials

Syllabus Information

Academic Year: 2020/21

Subject: 29821 - Strenght of Materials

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

326 - Escuela Universitaria Politécnica de Teruel

Degree: 440 - Bachelor's Degree in Electronic and Automatic Engineering

444 - Bachelor's Degree in Electronic and Automatic Engineering

ECTS: 6.0

Year: 3

Semester: First semester

Subject Type: Compulsory

Module: ---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

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

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The teaching methodology is structured in four levels:

- Theory sessions where the main subject contents are presented and discussed
- Practice sessions where practical applications of the theoretical concepts are developed and solved
- Computer lab sessions where the theoretical concepts are applied
- Development of a practical task based on a real application

4.2.Learning tasks

There will be the following activities

- Theory sessions (T1) (30 hours). They constitute the central teaching core. In them, the scientific body contained in the syllabus is developed and examples of applications are presented.
- Practice sessions (T2) (15 hours). Practice sessions complement the theory ones by allowing the student to apply the theoretical concepts to the resolution of practical problems. These sessions can also be used to develop skills such as the application of empirical formulas of specific use, the use of tables, etc.
- Computer lab sessions (T3) (15 hours). The aim is to familiarise students with another of the basic tools of the

subject, such as calculus and numerical simulation. The fundamental objective of these sessions is for the student to be able to interpret the results obtained by means of the computer, being able to discern if these are suitable or not.

- Development of a practical task (T6) (15 hours). It aims to develop the formula of project-based learning to reinforce the rest of the teaching activities and, together with laboratory and computation sessions, allow the student to acquire teamwork skills.
- Autonomous work and study (T7) (72 hours). The student's autonomous work of the theoretical part and problem solving. The student's continuous work will be encouraged by the homogeneous distribution of the various learning activities throughout the course. Tutorials are included here, such as direct attention to the student, identification of learning problems, orientation in the subject, support to exercises and work.
- Assessments (T8) (3 hours). In addition to the grading function, assessment is also a learning tool with which the student checks the degree of understanding and assimilation achieved.

4.3.Syllabus

The course will address the following topics:

1. Introduction to the Mechanics of solids and structures
2. Axial stress/strain
3. Torsion of sections
4. Shear and bending of beams
5. Compound bending
6. Determinate and indeterminate structural problems
7. Buckling of struts
8. Thin plates

4.4.Course planning and calendar

The course calendar is defined by the University of Zaragoza. Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the EINA website (<http://eina.unizar.es>) and EUPT website (<https://eupt.unizar.es/>).

In addition, a detailed schedule of activities (computer lab sesión, deadlines, ...) will be available on the website of this course (<http://moodle.unizar.es/>).

The practical task should be presented before the exam. The deadline is fixed by the corresponding professor.

Every professor fixes their office hours.

4.5.Bibliography and recommended resources