28612 - Structures I: Introduction to Structures

Información del Plan Docente

Academic Year	2017/18
Faculty / School	175 - Escuela Universitaria Politécnica de La Almunia
Degree	422 - Bachelor's Degree in Building Engineering
ECTS	6.0
Year	2
Semester	First semester
Subject Type	Compulsory
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

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

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

Presentation general methodology

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

Strong interaction between the teacher/student. This interaction is brought into being through a division of work and

responsibilities between the students and the teacher. Nevertheless, it must be taken into account that, to a certain degree, students can set their learning pace based on their own needs and availability, following the guidelines set by the teacher.

The current subject is conceived as a stand-alone combination of contents, yet organized into three fundamental and complementary forms, which are: the theoretical concepts of each teaching unit, the solving of problems or resolution of questions and laboratory work, at the same time supported by other activities

The organization of teaching will be carried out using the following steps:

- **Theory Classes** : Theoretical activities carried out mainly through exposition by the teacher, where the theoretical supports of the subject are displayed, highlighting the fundamental, structuring them in topics and or sections, interrelating them.
- **Practical Classes** : The teacher resolves practical problems or cases for demonstrative purposes. This type of teaching complements the theory shown in the lectures with practical aspects.
- **Individual Tutorials** : Those carried out giving individual, personalized attention with a teacher from the department. Said tutorials may be in person or online.

5.2.Learning tasks

Programmed learning activities

The programme offered to the student to help them achieve their target results is made up of the following activities...

Involves the active participation of the student, in a way that the results achieved in the learning process are developed, not taking away from those already set out, the activities are the following:

Face-to-face generic activities :

- **Theory Classes** : The theoretical concepts of the subject are explained and illustrative examples are developed as support to the theory when necessary.
- **Practical Classes** : Problems and practical cases are carried out, complementary to the theoretical concepts studied.

Generic non-class activities :

- Study and understanding of the theory taught in the lectures.
- Understanding and assimilation of the problems and practical cases solved in the practical classes.
- Preparation of seminars, solutions to proposed problems, etc.
- Preparation of the written tests for continuous assessment and final exams.

The subject has 6 ECTS credits, which represents 150 hours of student work in the subject during the trimester, in other words, 10 hours per week for 15 weeks of class.

A summary of a weekly timetable guide can be seen in the following table. These figures are obtained from the subject file in the Accreditation Report of the degree, taking into account the level of experimentation considered for the said subject is moderate.

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Activity / Weekly school hours

Lectures / 4

Other Activities / 6

5.3.Syllabus

Set of topics

Topic 1: Introduction. Fundamental concepts

Topic 2: Isostatic forces calculation

Topic 3: Mechanical properties of the materials

Topic 4: Single tension and compression

Topic 5: Single flexion

Topic 6: Axial - flexion forces combination

Topic 7: Shear forces

Topic 8: Torsion forces

Topic 9: Beams deformation

Topic 10: Energetic Theorems

Topic 11: Hyperstatic beams

Topic 12: Flexibility and stiffness

Topic 13: Porticoes and Arches

5.4.Course planning and calendar

Calendar of meetings attend them and presentation of works

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The dates of both final examinations will be the published ones of official form in http: // www.eupla.es/secretaria/academica/examenes.html .

The dates of the partial tests will communicate to the beginning of the classes.

5.5.Bibliography and recommended resources

The subject actualiced bibliography will be consulted at the library web page http://psfunizar7.unizar.es/br13/eBuscar.php?tipo=a

- Vázquez Fernández, Manuel. Resistencia de materiales / Manuel Vázquez . - 3a. ed. Madrid : Noela, 1994
- Argüelles Alvarez, Ramón. Cálculo de estructuras / por Ramón Argüelles Alvarez . - [1a. ed.] Madrid : Escuela Técnica Superior de Ingenieros de Montes , 1981
- España. Ministerio de la Vivienda. Código Técnico de la Edificación / edición preparada por Departamento de Redacción Aranzadi. - 2ª ed. Cizur Menor (Navarra) : Aranzadi, 2008
- Ortíz Berrocal, Luis. Resistencia de materiales / Luis Ortíz Berrocal . - 3ª ed., [reimpr.] Madrid [etc.] : McGraw-Hill/Interamericana, D.L. 2010
- Timoshenko, Stephen P.. Mecánica de materiales / Stephen P. Timoshenko, James M. Gere México [etc.] : Unión Tipográfica Editorial Hispano- americana, 1974
- Norris, Charles Head. Análisis elemental de estructuras / Charles Head Norris, John Benson Wilbur, Senol Utku . - 3a. ed., 2a. ed. en español Bogotà [etc.] : McGraw-Hill, 1982
- Kardestuncer, Hayrettin. Introducción al análisis estructural con matrices / Hayrettin Kardestuncer México [etc.] : Libros McGraw-Hill, cop. 1975
- Resistencia de materiales / Nicholas Willems México [etc.] : McGraw-Hill, 1984
- Coates, R.C.. Structural analysis / R. C. Coates, M. G. Coutie, F. K. Kong. - 3rd ed Chapman & Hall, ; London :, 1988

Material resources.

Materials supplied during the development of the subject across the platform Moodle:

- Notes of theory

- Practical exercises

- Presentations used in class