

28612 - Structures I: Introduction to Structures

Información del Plan Docente

Academic Year	2016/17
Academic center	175 - Escuela Universitaria Politécnica de La Almunia
Degree	422 - Bachelor's Degree in Building Engineering
ECTS	6.0
Course	2
Period	First semester
Subject Type	Compulsory
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

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

Presentation general methodology

Strong interaction between the teacher/student. This interaction is brought

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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 and the solving of problems or resolution of questions, 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 activities

Programmed learning activities

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

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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,

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taking into account the level of experimentation considered for the said subject is moderate.

Activity	Weekly school hours
Lectures	4
Other Activities	6

5.3.Program

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

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5.4.Planning and scheduling

Calendar of meetings attend them and presentation of works

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 recomended resources

- 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 Bogotá [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

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Material resources.

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

- Notes of theory

- Practical exercises

- Presentations used in class