Universidad Zaragoza

Year : 2019/20

28715 - Structure Technology

Syllabus Information

Academic Year: 2019/20
Subject: 28715 - Structure Technology
Faculty / School: 175 -

Degree: 423 - Bachelor's Degree in Civil Engineering

ECTS: 6.0
Year: 2
Semester: Second semester
Subject Type: Compulsory
Module: ---

1.General information

1.1.Aims of the course

The general objective is to cultivate and accentuate the design and design aspects of the structures project. More specifically, we look for:

- Intuitive knowledge of resistant mechanisms. It is about the student learning to "feel" the resistant work of the simple pieces.
- Subject oriented basically towards the project, fostering in the student the mentality of the designer.
- Valuation of the good conception and of the successful design as indispensable conditions of a quality project.
- Acquisition of the global meaning of the structural calculation concept.
- Introduction of sectional sizing of the most common materials.
- Continuous references to the calculation of structures already known by students (Theory of structures), seeking mental connections between structural forms and organizations and resistant mechanisms that develop, on the one hand, and between resistant mechanisms and signs and types of efforts on the other.

1.2.Context and importance of this course in the degree

The subject of Technology of Structures, is part of the Degree in Civil Engineering taught by EUPLA, framed within the group of subjects that make up the module called Common Formation. It is a subject of the second course located in the fourth semester and mandatory (OB), with a teaching load of 6 ECTS credits.

This subject involves the acquisition by the student of certain specific basic competences of the degree, in addition to providing additional useful training in the performance of civil engineering functions related to the field of structures.

The need of the subject within the curriculum of the present degree is more than justified and it is understood that the ideal would be that, as a student, this subject will be started with clear ideas regarding the knowledge of statics, mathematics , physics, and theory of structures, previous knowledge acquired in previous subjects.

1.3.Recommendations to take this course

Although it is not required to have passed the subjects of Mathematics, Physics and Mechanics of the first year, it is highly recommended to have acquired skills in the application of the basic concepts of them. Equally, the use of the subject Theory of Structures is very advisable. The student, before starting this course, should be able to:

Understand the concept of function and know how to work with polynomials and trigonometric functions.

Solve a linear system with different numbers of unknowns.

Solve a polynomial equation of "n" degrees.

Handle basic notions of vector and matrix calculation.

Derive and integrate polynomial functions.

Derive and integrate trigonometric functions.

Make changes of units freely.

Project vectors in two and three dimensional systems.

Calculate the module of a vector.

Apply the equations of the statics to obtain one or more unknown forces.

Calculate simple articulated lattices.

Calculate stress laws of simple biapoyed beams.

Calculate stress laws of beams, gantries and isostatic and hyperstatic arcs.

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 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 Tecnologia de Estructuras, 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

4.2.Learning tasks

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.

? **Laboratory Workshop**: This work is tutored by a teacher, in groups of no more than 20 students.

? **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 laboratory workshops, preparation of summaries and reports.

? 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.

Activity	**Weekly school hours**
Lectures	3

Laboratory Workshop	1
Other Activities	6

4.3.Syllabus

Syllabus

Topic 1	SAFETY CRITERIA. THEORY OF THE CONDITIONS LIMITS
Topic 2	CHARACTERISTICS OF THE MATERIALS. CONCRETE AND STEEL
Topic 2	CALCULATION OF SECTION FOR THE CLASSIC METHOD. MOMENT RAN. I CALCULATE OF SECTIONS IN DEPLETION
Topic 4	BASIC HYPOTHESES ON THE CONDITIONS LAST LIMITS. GRAPH OF PIVOTS
Topic 5	CALCULATE TO FLEXION. I CALCULATE TO FLEXION ESVIADA
Topic 6	SHEAR FORCE
Topic 7	ANALYSES OF THE BULGE
Topic 8	TWIST
Topic 9	ARMED WITH ELEMENTS OF ARMED CONCRETE
Topic 10	ARMED WITH ELEMENTS OF CONCRETE
Topic 11	ARMED WITH ELEMENTS OF CONCRETE
Topic 12	WROUGHT UNIDIRECCIONES OF ARMED CONCRETE
Topic 13	MEASURED OF METALLIC ELEMENTS
Topic 14	MEASURED OF METALLIC ELEMENTS
Topic 15	MEASURED OF METALLIC ELEMENTS

Practical. There were realized practical exercises of every topic.

4.4.Course planning and calendar

Calendar of meetings attend them and presentation of works

Every semester has 15 weeks that adjust to the agenda.
The continuous assessment takes a calendar of activities that debera to respect.
The activities of continuous assessment were realized after finishing the agendas of class of every paragraph.

Calendar of evaluation.

Nombre	**Inicio**	**Entrega**	**Solución**	**Calificación**
Practice 1	3 week	4 week	4 week	5 week
Practice 2	7 week	8 week	8 week	9 week
Practice 3	12 week	13 week	13 week	14 week
(1ªConv)				
(2ªConv)				

The dates of final examinations, they are capable of changes. They will prevail the official dates published in http: // www.eupla.es

1. Recusrsos

Materials

The whole material of class was joining in the platform Moodle

4.5.Bibliography and recommended resources

http://biblos.unizar.es/br/br_citas.php?codigo=28715&year=2019