

## 28725 - Foundation Structures

### Syllabus Information

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**Academic Year:** 2019/20

**Subject:** 28725 - Foundation Structures

**Faculty / School:** 175 -

**Degree:** 423 - Bachelor's Degree in Civil Engineering

**ECTS:** 6.0

**Year:** 3

**Semester:** Second semester

**Subject Type:** Compulsory

**Module:** ---

## 1.General information

### 1.1.Aims of the course

The subject and its expected results respond to the following approaches and objectives:

At the end of this subject, and in summary way the student:

It will have the right knowledge to be able to safely project all kinds of deep foundations, especially the pilings and also, to do it in accordance with the most modern regulations.

You will have the right knowledge to be able to project safely and practically all types of surface foundations.

You can design and build various types of containment structures.

You will know techniques of slope stability and land improvement.

### 1.2.Context and importance of this course in the degree

The subject of Foundation Structures, is part of the Degree in Civil Engineering taught by EUPLA, framed within the group of subjects that make up the module called Specific Training Formative Course of Civil Constructions, related to the geotechnical-structural world. It is a subject of the third course located in the sixth semester, with a teaching load of 6 ECTS credits. It is taught on a compulsory basis for students of the Degree in Civil Engineering of the training course of Civil Constructions and optional for students of the same degree with training itineraries in Hydrology and Transportation and Urban Services.

This subject implies a very important impact in the acquisition of the competences of the degree, as well as providing additional useful training in the performance of civil engineering functions related to the field of structures and geotechnical. You can not understand a civil engineer without high level structural and geotechnical knowledge, and the subject has the objective of creating the foundations, (never better said) of these essential knowledge for the performance of the engineering profession. 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 structures, materials and geotechnics, previous knowledge acquired in previous studies.

### 1.3.Recommendations to take this course

Although there are no longer "key subjects", it is advisable to have passed the previous subjects related to structures and geotechnics: Structural Theory, Structural Technology and Geotechnics, all of the 2nd year of Civil Engineering. The student, before starting this course, should be able to:

Plan a geotechnical prospecting campaign.

Master the methodological procedures aimed at the physical characterization of soils frequently used in civil engineering.

Calculate seats and tensions in different layers of the land subjected to various types of loads.

Solve both isostatic and hyperstatic structures, obtaining the different efforts that are requested.

Solve pure, compound and simple bending problems at the section level.

Predimension with steel.

Predimension with concrete.

## 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 Estructuras de Cimentación, 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

|         |                    |
|---------|--------------------|
| Topic 1 | GEOTECHNICAL STUDY |
|---------|--------------------|

|          |                               |
|----------|-------------------------------|
| Topic 2  | RECOGNITION OF THE AREA       |
| Topic 3  | PROPERTIES OF THE SOILS       |
| Topic 4  | TENSIONS AND CAPACITY         |
| Topic 5  | WALLS OF CONTAINMENT          |
| Topic 6  | WALLS OF BASEMENT AND SCREENS |
| Topic 7  | SUPERFICIAL FOUNDATIONS       |
| Topic 8  | SLABS OF FOUNDATION           |
| Topic 9  | PILES                         |
| Topic 10 | PATHOLOGY OF THE FOUNDATIONS  |

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. Recursos

### 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=28725&year=2019](http://biblos.unizar.es/br/br_citas.php?codigo=28725&year=2019)