Course guides
220239 - 220239 - Geotechnical Engineering

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 758 - EPC - Department of Project and Construction Engineering.
Degree: MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Optional subject).
MASTER'S DEGREE IN AERONAUTICAL ENGINEERING (Syllabus 2014). (Optional subject).
MASTER'S DEGREE IN SPACE AND AERONAUTICAL ENGINEERING (Syllabus 2016). (Optional subject).

Academic year: 2021 ECTS Credits: 3.0 Languages: English

LECTURER

Coordinating lecturer: David Vives

Others:

TEACHING METHODOLOGY

The course is divided into parts:
Theory classes
Practical classes
Self-study for doing exercises and activities.
In the theory classes, teachers will introduce the theoretical basis of the concepts, methods and results and illustrate them with examples appropriate to facilitate their understanding.
In the practical classes (in the classroom), teachers guide students in applying theoretical concepts to solve problems, always using critical reasoning. We propose that students solve exercises in and outside the classroom, to promote contact and use the basic tools needed to solve problems.
Students, independently, need to work on the materials provided by teachers and the outcomes of the sessions of exercises/problems, in order to fix and assimilate the concepts.
The teachers provide the syllabus and monitoring of activities (by ATENEA).

LEARNING OBJECTIVES OF THE SUBJECT

To achieve a general overview of soil mechanics, earth retaining walls and foundations, allowing the student to face the main basic issues to be developed in a foundation project.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study</td>
<td>48,0</td>
<td>64.00</td>
</tr>
<tr>
<td>Hours large group</td>
<td>27,0</td>
<td>36.00</td>
</tr>
</tbody>
</table>

Total learning time: 75 h
CONTENTS

**Module 1: SOIL MECHANICS**

**Description:**
- Introduction to soil behavior. Main parameters.
- Load distribution throughout a soil.
- Soil's resistance to shear stress.
- Earth pressure against structures.

**Full-or-part-time:** 23h
Theory classes: 9h
Self study: 14h

**Module 2: EARTH RETAINING STRUCTURES**

**Description:**
- General aspects of earth retaining walls
- Gravity retaining walls
- Cantilever earth retaining walls
- Diaphragm earth retaining walls: BLUM method

**Full-or-part-time:** 33h
Theory classes: 11h
Self study: 22h

**Module 3: FOUNDATIONS**

**Description:**
- Introduction to foundations. Requirements and types.
- Surface foundations.
- Pile foundations.

**Full-or-part-time:** 19h
Theory classes: 7h
Self study: 12h

**GRADING SYSTEM**

40 % Theoretical part exam (1 final exam)
50 % Practical part exam (1 final exam)
10% Activities and problems to be proposed in class (during the course)

**BIBLIOGRAPHY**

**Basic:**

**Complementary:**