Course guide  
2500056 - GECCONGEOT - Geothecnical Constructions

Unit in charge: Barcelona School of Civil Engineering  
Teaching unit: 751 - DECA - Department of Civil and Environmental Engineering.  
Degree: BACHELOR'S DEGREE IN CIVIL ENGINEERING (Syllabus 2020). (Optional subject).  
Academic year: 2022  
ECTS Credits: 4.5  
Languages: Catalan

LECTURER

Coordinating lecturer: SEBASTIAN OLIVELLA PASTALLE  
Others: SEBASTIAN OLIVELLA PASTALLE, NURIA MERCE PINYOL PUIMARTI, IVAN PUIG DAMIANS

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

General:
14380. Scientific-technical training for the exercise of the profession of Technical Engineer of Public Works and knowledge of the functions of advice, analysis, design, calculation, project, construction, maintenance, conservation and exploitation.
14383. Ability to project, inspect and direct works, in their field.
14386. Capacity for maintenance, conservation and exploitation of infrastructure, in its field.
14389. Knowledge of the history of civil engineering and training to analyze and assess public works in particular and construction in general.
14391. Conceive, project, manage and maintain systems in the field of construction engineering. Cover the entire life cycle of an infrastructure or system or service in the field of construction engineering. (Additional school competition).

TEACHING METHODOLOGY

The course consists of 1.5 hours per week of classroom activity (large size group) and 1.5 hours weekly with half the students (medium size group).

The 1.5 hours in the large size groups are devoted to theoretical lectures, in which the teacher presents the basic concepts and topics of the subject, shows examples and solves exercises.

The 1.5 hours in the medium size groups is devoted to solving practical problems with greater interaction with the students. The objective of these practical exercises is to consolidate the general and specific learning objectives.

Support material in the form of a detailed teaching plan is provided using the virtual campus ATENEA: content, program of learning and assessment activities conducted and literature.

Although most of the sessions will be given in the language indicated, sessions supported by other occasional guest experts may be held in other languages.
LEARNING OBJECTIVES OF THE SUBJECT


1. Ability to design and analyze land outlets. 2) Capaticat to analyze problems of slope stability in linear works. 3) Ability to apply concepts on soil improvement.

- Behavior of dams, embankments and, in general, geotechnical structures that involve construction with the soil. Auxiliary Systems in Geotechnical Engineering for waterproofing and / or soil improvement. Geomembranes and Geotextiles. - Design of waterproofing systems for the protection of the environment. Design, specifications and construction of filters and other auxiliary elements.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guided activities</td>
<td>4,5</td>
<td>4,00</td>
</tr>
<tr>
<td>Self study</td>
<td>63,0</td>
<td>56,00</td>
</tr>
<tr>
<td>Hours large group</td>
<td>22,5</td>
<td>20,00</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>22,5</td>
<td>20,00</td>
</tr>
</tbody>
</table>

Total learning time: 112.5 h

CONTENTS

1. Introduction

Description:
Subject presentation

Full-or-part-time: 2h 24m
Theory classes: 1h
Self study: 1h 24m

2. Geotechnics in hydraulic infrastructures

Description:
Embankments to build chanel and aqueducts.
Methodology discussion
Landings. Behavior during construction and operation
Methodology discussion
Urban underground conduits and canalizations
Methodology discussion
Singular underground aqueduct
Settlements in big infrastructures
Methodology discussion

Full-or-part-time: 33h 36m
Theory classes: 10h
Practical classes: 4h
Self study: 19h 36m
### 3. Tools for analysis

**Description:**
Programs for calculating foundations and walls
Practical aspects

**Full-or-part-time:** 9h 36m
Theory classes: 2h
Practical classes: 2h
Self study: 5h 36m

### 4. Geotechnics in transportation infrastructures

**Description:**
Foundations for especial structures on roads
Methodology discussion
Reinforcement of slopes in railway works
Methodology discussion
Infiltration ponds, interaction with transportation infrastructures
Methodology discussion
Reinforced soil walls
Methodology discussion

**Full-or-part-time:** 28h 47m
Theory classes: 8h
Practical classes: 4h
Self study: 16h 47m

### 5. Geotechnics in other infrastructures

**Description:**
Engineering barriers for waste isolation
Methodology discussion

**Full-or-part-time:** 9h 36m
Theory classes: 2h
Practical classes: 2h
Self study: 5h 36m

### 6. Evaluation

**Description:**
Coursework, presentation in class
Course assignment, development

**Full-or-part-time:** 24h
Practical classes: 4h
Laboratory classes: 6h
Self study: 14h
GRADING SYSTEM

The evaluation of the subject will be carried out by means of exercises of continuous evaluation to carry out related with the theoretical sessions and assignments individual or in group. The final mark will be the arithmetic average of the marks of the assignments.

Criteria for re-evaluation qualification and eligibility: students that failed the ordinary evaluation and have regularly attended all evaluation tests will have the opportunity of carrying out a re-evaluation test during the period specified in the academic calendar. Students who have already passed the test or were qualified as non-attending will not be admitted to the re-evaluation test. The maximum mark for the re-evaluation exam will be five over ten (5.0). The non-attendance of a student to the re-evaluation test, in the date specified will not grant access to further re-evaluation tests. Students unable to attend any of the continuous assessment tests due to certifiable force majeure will be ensured extraordinary evaluation periods.

These tests must be authorized by the corresponding Head of Studies, at the request of the professor responsible for the course, and will be carried out within the corresponding academic period.

BIBLIOGRAPHY

Basic: