Course guide
2500027 - GECPCONSEL - Construction Methods and Electrical Engineering

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). (Compulsory subject).
Academic year: 2022  ECTS Credits: 6.0  Languages: Spanish, English

LECTURER

Coordinating lecturer: GONZALO RAMOS SCHNEIDER
Others: MARC CHEAH MAÑÉ, MAGÍ DOMINGO TARANCÓN, SAMUEL GALCERAN ARELLANO, EDUARDO JR PIEDAD, GONZALO RAMOS SCHNEIDER, JOAN RULL DURAN, NIKOLA TOSIC

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
14406. Ability to analyze the problem of safety and health in construction sites. (Common module to the Civil branch)
14407. Fundamental knowledge about the electric power system: power generation, transport network, distribution and distribution, as well as types of lines and conductors. Knowledge of the regulations on low and high voltage. (Common module to the Civil branch)
14409. Knowledge of construction procedures, construction machinery and techniques of organization, measurement and evaluation of works. (Common module to the Civil branch)
14415. Ability to apply construction procedures, construction machinery and construction planning techniques. (Specific technology module: Civil Construction)

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.
14381. Understanding of the multiple technical and legal conditions that arise in the construction of a public work, and ability to use proven methods and accredited technologies, in order to achieve the highest efficiency in construction while respecting the environment and the protection of the health and safety of workers and users of public works.
14382. Knowledge, understanding and ability to apply the necessary legislation during the exercise of the profession of Technical Engineer of Public Works.
14383. Ability to project, inspect and direct works, in their field.
14388. Knowledge and ability to apply business management techniques and labor legislation.
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 2 hours per week of classroom activity (large size group) and 2 hours weekly with half the students (medium size group).

The 2 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 2 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.

LEARNING OBJECTIVES OF THE SUBJECT

Relation and analysis of constructive procedures and construction machinery. Constituent Elements of civil works. Most common operations in different types of work and the machinery used in each case, including prevention, safety and health, the environment and construction quality systems. Electric power system: Power generation, transport network, delivery and distribution, as well as on types of lines and conductors. Regulations on low and high voltage.

1 Ability to carry out a study of measurements and prices in a public works project.
2 Ability to prepare a budget for a public works project using a computer tool.
3 Ability to develop the planning and organization of a public work.
4. Ability to analyze and assess public works in particular and construction in general.

Knowledge of the construction techniques applied to public works. Knowledge of the most common operations on site and the machinery used in each case (earthworks, piles, walls, concrete and bituminous mixtures). Basic knowledge of the electricity transmission and distribution system, as well as the design and calculation criteria for installations and consumption.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Self study</td>
<td>84,0</td>
<td>56.00</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>30,0</td>
<td>20.00</td>
</tr>
<tr>
<td>Hours large group</td>
<td>30,0</td>
<td>20.00</td>
</tr>
<tr>
<td>Guided activities</td>
<td>6,0</td>
<td>4.00</td>
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**Total learning time:** 150 h
CONTENTS

Electrical engineering

Description:
Introduction to the electric power system
Single-phase circuits
Three-phase circuits
Transformers
Facilities
Practices

Full-or-part-time: 48h
Theory classes: 11h
Practical classes: 9h
Self study: 28h

Construction methods

Description:
Construction of structures
Construction of underground works
Construction of hydraulic infrastructures
Practical cases

Full-or-part-time: 96h
Theory classes: 19h
Practical classes: 21h
Self study: 56h

GRADING SYSTEM

The mark of the course is obtained from the ratings of continuous assessment and their corresponding laboratories and/or classroom computers.

Continuous assessment consist in several activities, both individually and in group, of additive and training characteristics, carried out during the year (both in and out of the classroom).

The teachings of the laboratory grade is the average in such activities.

The evaluation tests consist of a part with questions about concepts associated with the learning objectives of the course with regard to knowledge or understanding, and a part with a set of application exercises.
BIBLIOGRAPHY

Basic: