

Academic Year: (2023 / 2024)

Review date: 04-05-2023

Department assigned to the subject: Continuum Mechanics and Structural Analysis Department

Coordinating teacher: LOYA LORENZO, JOSE ANTONIO

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 2

OBJECTIVES

Competencies acquired by the student:

- * Ability to integrate knowledge and face the complexity of formulating judgments from information that, being incomplete or limited, includes reflections on the social and ethical responsibilities linked to the application of their knowledge and judgments.
- * Ability to carry out strategic planning and apply it to construction systems in their quality aspects.
- * Ability to understand the aspects of the design of industrial plants.
- * Ability to use computational structural calculation systems, digitization of structures, and industrial constructions.
- * Ability to identify different methods of quality control and perform the verification of construction processes of industrial structures.

Learning results are acquired by the student. Once the course has been passed, the student is expected to be able to:

- * Know the process of digital modeling of industrial plants and the modeling of existing plants.
- * To know the capabilities that each participant in the project must have, with special emphasis on those of the structural calculator.
- * To know the quality control activities during the design, construction, and commissioning of industrial plants.
- * To know the supervision of detailed engineering.
- * To know the controls to be carried out on materials and structures before their transport to the site and at their reception.
- * To know the quality controls during construction and assembly.
- * To know about the operation tests in industrial plants.

DESCRIPTION OF CONTENTS: PROGRAMME

The contents of the course are divided into two blocks, the first one dedicated to information modeling in construction and the second one to on-site quality control.

Information modeling in construction

1. Digital modeling systems for industrial projects.
 - Definition of a digital model.
 - Content of digital models.
 - Functionalities of a digital model in the different phases of the project.
 - Existing software.
2. The design of civil works and structures in a digital model.
 - Exchange of information with the model.
 - Detection of interferences and their resolution.
3. Structural calculation programs integrated into digital modeling software.
4. Digital models of existing infrastructure.

On-site quality control

1. Introduction to quality control: quality control plans and regulations.
2. Quality control in the design phase.
 - Supervision of geotechnical studies.
 - Supervision of structural design.
3. Quality controls on materials before their reception on site: documentary and manufacturing controls.
4. Quality controls during construction.
 - Supervision of the detailed engineering carried out during construction.

- Quality control of earthworks, concrete elements, and metallic structures.
5. Functional tests.

LEARNING ACTIVITIES AND METHODOLOGY

Training activities:

- * Theoretical classes. Lectures. (0,6 ECTS)
- * Problem classes. Classroom exercises for the understanding of the syllabus. (0.18 ECTS)
- * Laboratory practices. (0.12 ECTS)
- * Tutorials. (0.04 ECTS)
- * Individual and group work of the student. (1.94 ECTS)

Teaching methodologies:

- * Lectures. Class lectures by the professor with the support of computer and audiovisual media, in which the main concepts of the subject are developed and materials and bibliography are provided to complement the students' learning.
- * Practical sessions. Resolution of problems, etc. posed by the teacher individually or in groups.
- * Laboratory practices. Related to information modeling and quality control using specific equipment and software, under the guidance and supervision of the teacher.

ASSESSMENT SYSTEM

Continuum assessment system based on short tests and reports.

The assessment system of subjects is:

- EVALUACIÓN CONTINUA: 40%
- EVALUACIÓN FINAL: 60%

% end-of-term-examination:	60
% of continuous assessment (assignments, laboratory, practicals...):	40

BASIC BIBLIOGRAPHY

- Alvaro García Messeguer Fundamentos de Calidad en Construcción, Fundación cultural COAT Sevilla.
- Cristina Sainz Larrea Proyecto, normativa y control de calidad de estructuras de edificación, Dossat.
- Enrique Viola La calidad de una obra, Nobuko.
- Juan Pérez Mínguez y Antonio Sabador Moreno Calidad de diseño en la Construcción, Díaz de Santos.
- Kaoru Ishikawa Introducción al control de calidad, Díaz de Santos.