

Structural Engineering

Academic Year: (2023 / 2024)

Review date: 01-05-2023

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

Coordinating teacher: SANCHEZ SAEZ, SONIA

Type: Compulsory ECTS Credits : 6.0

Year : 1 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Structural Mechanics, Elasticity, Strength of Materials

OBJECTIVES

Ability to design, construction and operation of industrial plants.
Knowledge of construction, building, facilities, infrastructure and urban planning in the field of industrial engineering.
Knowledge and skills for the analysis and design of structures.
Knowledge and application of technical rules of industrial structures

DESCRIPTION OF CONTENTS: PROGRAMME

Topic 0. Previous fundamentals concepts

1. Equilibrium
2. Types of support
3. Statically indetermination degree
4. Force laws

Topic 1. Analysis of procedures

1. Calculation of movements
2. Energy theorems
3. Principle of superposition
4. Symmetry and antisymmetry
5. Thermal Loads

Topic 2. Frames

1. Calculation of efforts in frames
2. Calculation of movement in frames
3. Analysis of non statically undetermined frames
4. Thermal loads and errors in executions

Topic 3. Reticulated structures

1. Approach and objectives
2. Concept of non-translational or translational structures
3. Methods of resolution
4. Arches

Topic 4. Matrix calculus

1. Calculation hypothesis
2. Calculation Methods
3. Phases of matrix analysis
4. Loads in bars
5. Symmetry and anti-symmetric

LEARNING ACTIVITIES AND METHODOLOGY

Lectures, classes resolve doubts in small groups, student presentations, individual tutorials and personal work, including study, tests and examinations; aimed at the acquisition of theoretical knowledge.

ASSESSMENT SYSTEM

The assessment system includes continuous assessment of student work and evaluation through a final written exam that comprehensively evaluate the knowledge, skills and abilities acquired throughout the course. The continuous evaluation will include practices and the corresponding reports, and a partial exam. In order for the continuous assessment to be taken into account, it will be necessary to obtain a minimum grade of 4 in the final exam.

In the extraordinary call, the final grade will be the maximum between the exam including continuous assessment and the exam only.

In order to pass the course, the attendance and performance of the laboratory practices foreseen in the weekly planning are compulsory. The weighting of the laboratory practice mark in the continuous assessment corresponds to what it is established in the course, in accordance with the regulations of the university. In this subject, the weighting of the laboratory practices takes the value of 37.5% of the continuous assessment grade.

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

BASIC BIBLIOGRAPHY

- R.C. Hibbeler. Structural analysis., Pearson Education Limited, 2019