

Academic Year: (2023 / 2024)

Review date: 21-09-2023

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

Coordinating teacher: ZAERA POLO, RAMON EULALIO

Type: Compulsory ECTS Credits : 6.0

Year : 1 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Engineering degree with theoretical concepts in Structural Mechanics (see Master's degree entry requirements)

OBJECTIVES

- Possess knowledge and understand concepts that provide a basis or opportunity to be original in the development and/or application of ideas, often in a research context.
- That students know how to apply their acquired knowledge and problem-solving skills in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study.
- To know the aspects and techniques of analytical and computational methods to project, calculate and design structures and plants in the field of Industrial Construction.
- Ability to formulate the necessary hypotheses to solve structural problems in industry.

DESCRIPTION OF CONTENTS: PROGRAMME

- Steel Structures
 - Calculation Methodologies and applicable regulations
 - Design, calculation and analysis of metallic structural elements.
 - Design of joints in metallic structures
- Reinforced concrete structures
 - Standards
 - Limit State Method
 - Anchorages and overlaps in reinforcements

LEARNING ACTIVITIES AND METHODOLOGY

- Lecture classes: 21 h
- Problem solving sessions: 21 h
- Laboratory sessions: 2 sessions of 1.5h each
- The student must also submit reports with the solutions of cases proposed by the professor.
- Tutorial sessions (2h each week) on the established schedule

ASSESSMENT SYSTEM

- Final assessment: 30%.
 - The final assessment consist of two reports (one on steel structures and the other on concrete structures) that will cover the knowledge acquired throughout the course.
- Continuous assessment (70%)
 - Short continuous assessment tests (14%) (two tests).
 - Laboratory practice report (18%) (two laboratory sessions).
 - Practical exercises (38%) (two exercises)

% end-of-term-examination:	30
% of continuous assessment (assignments, laboratory, practicals...):	70

BASIC BIBLIOGRAPHY

- AISC Steel Construction Manual, 15th Edition, AISC, 2017
- Code ACI 318-19 Building Code Requirements for Structural Concrete, American Concrete Institute, 2014
- Jack McCormac, Stephen Csernak Structural steel design 6th edition, Pearson, 2017
- Roger L. Brockenbrough Structural Steel Designer's Handbook 6th Edition, Mc Graw Hill, 2019
- William T. Segui Steel Design 6th Edition, CL Engineering, 2017

ADDITIONAL BIBLIOGRAPHY

- Edward S. Hoffman, David P. Gustafson Structural Design Guide to the AISC (LFRD), Springer / Chapman&Hall, 1996
- Jay Shen, Bulent Akbas Design Of Steel Structures, Mc Graw Hill, 2021
- Akbar R. Tamboli Handbook of Structural Steel Connection Design and Details (3rd ed), Mc Graw Hill, 2016
- Paul W. Richards Build With Steel: A Companion to the AISC Manual, CreateSpace, 2012