

Academic Year: ( 2019 / 2020 )

Review date: 31-10-2018

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

Coordinating teacher: VADILLO MARTIN, GUADALUPE

Type: Compulsory ECTS Credits : 6.0

Year : 1 Semester : 1

**STUDENTS ARE EXPECTED TO HAVE COMPLETED**

Students should have knowledge of Elasticity and Strength of Materials.

**COMPETENCES AND SKILLS THAT WILL BE ACQUIRED AND LEARNING RESULTS.**

Basic knowledge of the fundamentals and development of Finite Element Method (FEM).

Ability to formulate the most suitable mathematical model of a generic structure under various stresses.

Ability to build a finite element model from the physical model.

Ability to interpret critically the results of the analysis.

**Results**

After passing the course the student is expected to be able to:

- Know the basics and the formulation of the MEF,
- Modeling for analysis of different types structures with proper selection of element types to use,
- Develop appropriate mesh finite element
- Correctly modeling constraints and stresses
- Interpret the analysis results.

**DESCRIPTION OF CONTENTS: PROGRAMME**

- 1 Bases and fundamentals of the Finite Element Method
- 2 Application of M.E.F. in elastic problems
- 3 Application of M.E.F. in nonlinear problems
- 4 Application of M.E.F. in dynamic problems
- 5 Application of M.E.F. in fracture problems
- 6 Implementation of M.E.F.
- 7 Coupling systems
- 8 Using M.E.F. Commercial codes

**LEARNING ACTIVITIES AND METHODOLOGY**

The training activities include:

- Lectures, doubt solving classes in small groups, student presentations, individual tutorials and personal work, including studies, tests and trials aimed at the acquisition of theoretical knowledge.
- Classes of problems, individual tutorials and personal work, including study, tests and examinations, aimed at the acquisition of practical skills related to the course.

**ASSESSMENT SYSTEM**

The evaluation system includes continuous evaluation of student work (papers, class participation and skills and theoretical and practical knowledge assessment tests), and evaluation through a final exam in which be evaluated comprehensively the knowledge, skills and abilities acquired during the course. The percentages of each evaluation are:

- Overall assessment of knowledge through written examination, to a maximum of 60% of the final grade.
- Evaluation of individual work and continuous assessment, to a minimum of 40% of the final grade
- In order to pass the course, the student must have a minimum grade in the final exam of 4.0

**% end-of-term-examination:** 60

**% of continuous assessment (assignments, laboratory, practicals...):** 40