

60824 - Computer simulation in structural engineering

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	532 - Master's in Industrial Engineering
ECTS	6.0
Course	2
Period	First semester
Subject Type	Optional
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The learning process is based upon the following:

The applied methodology is based mainly in an active learning framework. For this to be possible, we consider the following structure of the course:

- Acquisition of theoretical concepts by means of lectures and problem-solving tutorials.

- Following the structure of the course, laboratory assignments will be solved with the help of the instructors. At the same

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time, a project will be developed throughout the course that applies the fundamental topics acquired.

- During office hours, students will be able to revise their learning outcome.

All these aspects will be complemented by lecture notes that will be available to the students from the beginning of the course.

5.2.Learning activities

During lectures, the following concepts will be developed and analysed in deep:

- Brief overview of the basic concepts of continuum mechanics.
- Geometrical modeling and meshing
- Advanced structural analysis
- Non linear simulation

5.3.Program

- Overview of linear elasticity
- Finite elements for linear elasticity
- Introduction to non-linear structural mechanics
- Non-linear kinematics
- Stress measures. Equilibrium
- Constitutive equations
- Introduction to plasticity
- Large strain plasticity
- Linearised equilibrium equations
- Boundary conditions

5.4.Planning and scheduling

The schedule of problem and lab lectures will be available from the beginning of the year. Exams will be scheduled by the School.

5.5.Bibliography and recommended resources