Ecoefficent design

Academic Year: (2023 / 2024) **Review date: 21/04/2023 22:01:36**

Department assigned to the subject: Continuum Mechanics and Structural Analysis Department, Mechanical Engineering

Coordinating teacher: SANTIUSTE ROMERO, CARLOS

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

It is not necessary to take any subject before this subject.

OBJECTIVES

Once the subject is passed, students will be able to:
- Know nonlinear mechanical behaviors of materials
- Handle design tools based on the Finite Element Method
- Know efficient manufacturing tools
- Design mechanical and structural elements making the most of the efficiency of materials

DESCRIPTION OF CONTENTS: PROGRAMME

1. Eco-efficient design and circular economy.
2. New materials with low environmental impact
3. Design tools applied to eco-efficient design
4. Manufacturing techniques with low environmental impact
5. Practical case

LEARNING ACTIVITIES AND METHODOLOGY

The teaching methodology is based on face-to-face classes, laboratory practices, tutorials and personal work by the student, aimed at the acquisition of theoretical knowledge and practical skills related to the subject's syllabus.
Students will be given the documentation used by the teacher in class (presentations,...).
Students, in groups of 3 or 4, will develop a project consisting of the design of a mechanical component. Throughout the course they will have to share the progress in their respective projects, in classes in which the teacher will comment on their proposals guiding them in the development of their work. Subsequently, the designs will be 3D printed and tested in the laboratory to verify the effectiveness of the design. Finally, it will be necessary to update the models so that the numerical results are adjusted to the experimental ones.

ASSESSMENT SYSTEM

% end-of-term-examination/test:	0
% of continuous assessment (assigments, laboratory, practicals…):	100

The evaluation of the student's knowledge will be carried out from:
A work, to be elaborated throughout the course, consisting of the design of a mechanical component.

ADDITIONAL BIBLIOGRAPHY

- S. S. Quek, G.R. Liu. The Finite Element Method: A Practical Course, Butterworth-Heinemann, 2003