Mechanical analysis and validation in design

Academic Year: (2023 / 2024) **Review date: 17-10-2023**

Department assigned to the subject: Mechanical Engineering Department

Coordinating teacher: QUESADA GONZALEZ, ALEJANDRO

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 1

OBJECTIVES

Design and develop 3D models in real time, as well as their subsequent redesign and optimization. It will analyze how the life cycle influences the design, for example the design oriented to the maintenance or the recycling, and how a model-based definition (MBD) approach allows to improve the time to market, optimize the efficiency and increase the quality of the products. To do this, it will delve into:
- Knowledge of the main tools and specialized design methodologies in mechanical engineering.
- Knowledge of the influence of the life cycle on design, in particular maintenance and recycling
- The use of local and global optimization algorithms for design, through computer methods and the use of heuristic techniques applied to design optimization.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Development of 3D models in real time
2. Design oriented to new manufacturing processes and materials
3. Design and topological adaptation of new products
4. Design optimization
5. Maintenance-oriented design
6. Influence of the life cycle in the design
7. Product design under the model-based definition (MBD) paradigm
8. Design quality control systems

ASSESSMENT SYSTEM

The evaluation of the subjects is based on two evaluation systems: continuous evaluation and final exam. The continuous evaluation can include, partial tests, deliveries of individual or group works and any other activity evaluated during the development of the school subject. The existence of a final exam ensures the individualization of the final evaluation.

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