Advanced machine design

Academic Year: (2022 / 2023)   **Review date: 13-05-2022**

Department assigned to the subject: Mechanical Engineering Department

Coordinating teacher: MUÑOZ ABELLA, MARIA BELEN

Type: Electives ECTS Credits : 6.0

Year : 4 Semester :

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Engineering Graphics
Machine Mechanics
Production systems and manufacturing technologies
Elasticity and strength of materials
Machines Technology

OBJECTIVES

To know the concepts of Mechanical Engineering using advanced computer-aided design methods.
To be able to apply computer-aided design techniques to solve problems in the field of Industrial Engineering.
To be able to apply computational analysis methods to the design and calculation of machines.
To be able to select suitable computer aided design methods for machine design.
To be able to apply theory and practice in computer-aided mechanical design.

DESCRIPTION OF CONTENTS: PROGRAMME

1. INTRODUCTION TO MECHANICAL DESIGN
2. COMPUTER AIDED DESIGN
3. SOLIDS MODELING
4. ASSEMBLY MODELING
5. FINITE ELEMENT METHOD
6. OPTIMAL DESIGN OF MECHANICAL COMPONENTS
7. CAD DESIGN

LEARNING ACTIVITIES AND METHODOLOGY

Theoretical-practical classes.
Student work.
Tutoring.

ASSESSMENT SYSTEM

The evaluation system consists of exercises, elaboration and presentation of a team report and a partial exam.

ORDINARY EXAM:

Continuous evaluation 100% of the mark. The percentage of each of the parts in the final grade is:

Exercises: 30 %.

Elaboration and presentation of the report: 40 %.

Partial exam: 30 %.

In order to pass the course a minimum of 4/10 is required in the partial exam.

EXTRAORDINARY EXAM:

The grade will be the maximum of the following 2 marks:

- Final exam grade (60%) and continuous assessment grade (40%).

- Final exam grade (100%).

% end-of-term-examination: 0

% of continuous assessment (assigments, laboratory, practicals…): 100

BASIC BIBLIOGRAPHY
 - Jeús Meneses, CArolina Álvarez, Santiago Rodríguez Introducción al Solid Edge, Thomson, 2006
 - Nam H. Kim et al. Introduction to finite element analysis and design, John Wiley & Sons, 2018
 - Rafael Gutiérrez, Lidia Esteban, Esther Pascual Solid Edge ST . Tradicional y si¿ncrono, RA-MA, 2010

BASIC ELECTRONIC RESOURCES
 - . Recursos gratuitos de Solid Edge para estudiantes.: https://solidedge.siemens.com/es/solutions/users/students/

 - . Abaqus Student edition: https://academy.3ds.com/en/software/abaqus-student-edition

 - . Abaqus documentation: https://abaqus-docs.mit.edu/2017/English/SIMACAEEXCRefMap/simaexc-c-docproc.htm