Computer aided manufacturing

Academic Year: (2023 / 2024) **Review date: 09-05-2023**

Department assigned to the subject: Mechanical Engineering Department

Coordinating teacher: MUÑOZ SANCHEZ, ANA

Type: Electives ECTS Credits : 6.0

Year : 4 Semester :

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Production and Manufacturing Systems
Manufacturing and Machine Technology

SKILLS AND LEARNING OUTCOMES

CB1. Students have demonstrated possession and understanding of knowledge in an area of study that builds on the foundation of general secondary education, and is usually at a level that, while relying on advanced textbooks, also includes some aspects that involve knowledge from the cutting edge of their field of study
CB2. Students are able to apply their knowledge to their work or vocation in a professional manner and possess the competences usually demonstrated through the development and defence of arguments and problem solving within their field of study.
CB3. Students have the ability to gather and interpret relevant data (usually within their field of study) in order to make judgements which include reflection on relevant social, scientific or ethical issues.
CB5. Students will have developed the learning skills necessary to undertake further study with a high degree of autonomy.
CG1. Ability to solve problems with initiative, decision-making, creativity, critical reasoning and to communicate and transmit knowledge, skills and abilities in the field of Industrial Engineering.
CG3. Ability to design a system, component or process in the field of Industrial Technologies to meet the required specifications
CG4. Knowledge and ability to apply current legislation as well as the specifications, regulations and mandatory standards in the field of Industrial Engineering.
CG5. Adequate knowledge of the concept of company, institutional and legal framework of the company. Organisation and management of companies.
CG6. Applied knowledge of company organisation.
CG8. Knowledge and ability to apply quality principles and methods.
CG9. Knowledge and ability to apply computational and experimental tools for the analysis and quantification of Industrial Engineering problems.
RA1. Knowledge and understanding: Have basic knowledge and understanding of science, mathematics and engineering within the industrial field, as well as knowledge and understanding of Mechanics, Solid and Structural Mechanics, Thermal Engineering, Fluid Mechanics, Production Systems, Electronics and Automation, Industrial Organisation and Electrical Engineering.
RA2. Engineering Analysis: To be able to identify engineering problems within the industrial field, recognise specifications, establish different resolution methods and select the most appropriate one for their solution
RA3. Engineering Design: To be able to design industrial products that comply with the required specifications, collaborating with professionals in related technologies within multidisciplinary teams.
RA5. Engineering Applications: To be able to apply their knowledge and understanding to solve problems and design devices or processes in the field of industrial engineering in accordance with criteria of cost, quality, safety, efficiency and respect for the environment.
RA6. Transversal Skills: To have the necessary skills for the practice of engineering in today's society.

OBJECTIVES

Previous knowledge acquired in previous topics is applied to CAM (Computer Aided Manufacturing)
CNC programming
Learning concepts related to CIM (computer integrated manufacturing) and automation
Using commercial CAD/CAE/CAM codes for practical manufacturing problems

DESCRIPTION OF CONTENTS: PROGRAMME

Introduction

Machining processes optimization

Manufacturing oriented design
Cutting tool selection
Tooling

CNC machine-tool programming

Commercial codes CAD/CAE/CAM

Resolution of manufacturing practical problem

LEARNING ACTIVITIES AND METHODOLOGY

Theoretical and practical lectures.
Laboratory.

ASSESSMENT SYSTEM

LA NOTA DE LA EVALUACIÓN CONTINUA SE OBTENDRÁ:
- Nota de las prácticas (20%).
- Nota caso práctico realizado durante el curso (50%).
- Nota del examen parcial (30%).

Asimismo, podrá realizarse el examen final en ambas convocatorias. La calificación final de la asignatura se obtendrá en base al siguiente sistema:

CONVOCATORIA ORDINARIA:
Opción 1: Evaluación sin examen final (nota de evaluac. continua = 100% nota).
Opción 2: Evaluación realizando el examen final. La nota será la máxima de las 2 siguientes:
- Nota examen final (60%) y nota de la evaluación continua (40%).
- Nota de la evaluación continua (100%).

CONVOCATORIA EXTRAORDINARIA:
La nota será la máxima de las 2 siguientes:
- Nota examen final (60%) y nota de la evaluación continua (40%).
- Nota del examen final (100%).

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

BASIC BIBLIOGRAPHY

- REGH, A.R. Computer-Integrated Manufacturing, Prentice Hall, 2001
- SINGH, N. Systems Approach to Computer-Integrated Design and Manufacturing, John Wiley & Sons, 1996
- Serope Kalpakjian Manufacturing Engineering And Technology, Addison-Wesley , 2001