Integrated manufacturing systems

Academic Year: (2022 / 2023) **Review date: 31/05/2022 21:26:49**

Department assigned to the subject: Mechanical Engineering Department

Coordinating teacher: CANTERO GUISANDEZ, JOSE LUIS

Type: Compulsory ECTS Credits : 3.0

Year : 2 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Subjects where they get basic knowledge about manufacturing and production systems and processes (subject Production and Manufacturing Systems).

OBJECTIVES

Skills that will gets by the student - Knowledge and ability to apply strategies of integrated manufacturing CIM, (Computer Integrated Manufacturing) to the design of manufacturing systems. - Reinforce knowledge of systems and mechanical manufacturing processes. Know relationships between process design, functionality of the piece and features of advanced materials. Integration of the aspects that include production systems. Learn advanced modeling techniques of forming processes. Learning outcomes get by the student: - Get enough approach for developing tasks about component design taking into account the manufacturing process thereof. - Understanding of the fundamental aspects presents in the manufacturing systems based on integrated manufacturing strategies.

DESCRIPTION OF CONTENTS: PROGRAMME

Introduction and general concepts: - Components of an integrated manufacturing system. - Design Engineering. CAD-CAM-CAE. - Concurrent Engineering. - Production and planning control. Integration of manufacturing systems. - Automated manufacturing systems. - Computer integrated systems (CIM). - Accomplishing of a CIM system. - CIM models. Design oriented to manufacturing: - Materials. - Limitations of the process. - Considerations relating to service conditions of the component. Design, engineering and computer aided manufacturing: - Product Modeling and forming processes. - Computer aided manufacturing (CAD-CAM). 4.0 Industry - Digitalization.

LEARNING ACTIVITIES AND METHODOLOGY

Training activities will include:

- Lectures with theoretical content primarily.

- Practical classes in classroom in which will be made problems, practical cases and students group exhibitions about issues related to systems and strategies of integrated manufacturing.

- Practical classes in Virtual Classrooms (synchronous virtual sessions) for applying tools of CAD-CAM-CAE to the resolution of specific problems proposed.

ASSESSMENT SYSTEM

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

To pass the subject it is mandatory to attend and carry out the laboratory practices.

The continuous evaluation system may allow pass the subject obtaining the highest qualification without having to pass final exam.

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

Practical case (includes practice 1) (60%).
Practice 2 work (5%).
Students group presentation (20%).
Partial exam (15%).

ORDINARY FINAL EVALUATION:
Option 1: Evaluation without final exam (continuous evaluation note = 100%).
Option 2: Evaluation through the final exam. The note will be the maximum of the two following:
- Note of the final exam (60%) and note of the continuous evaluation (40%).
- Note of the continuous evaluation (100%).

EXTRAORDINARY FINAL EVALUATION:
The note will be the maximum of the two following:
- Note of the final exam (60%) and note of the continuous evaluation (40%).
- Not of the final exam (100%).

BASIC BIBLIOGRAPHY

- Benhabib, Beno Manufacturing: Design, Production, Automation and Integration, Marcel Dekker, 2003

- Rehg, James A. Computer-integrated manufacturing, Prentice Hall, 2005

ADDITIONAL BIBLIOGRAPHY

- Rehg, James A. Computer-integrated manufacturing., Prentice Hall. , 2005