

66421 - Design and optimization of Manufacturing Systems

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	536 - Master's in Mechanical Engineering 330 - Complementos de formación Máster/Doctorado
ECTS	6.0
Course	XX
Period	Half-yearly
Subject Type	ENG/Complementos de Formación, Compulsory
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The learning process that is designed for this subject is based on the following:

Learning is based on the design and control of manufacturing systems and in the application of experimental techniques and optimization in this field. The proposed methodology seeks to promote student work and continued focus on the more practical aspects .

To do this, the various concepts related to the subject in lectures , later , in the classes of problems / practices are introduced, introducing different types of tools involved and develop industrial case studies. Subsequently , the classes will be used for the drafting of course , with extensive tutorial assistance of teachers of the subject.

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5.2. Learning activities

The program that the student is offered to help you achieve the expected results includes the following activities

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Theoretical and practical agenda

1) Introduction to Design of Manufacturing Systems.

2) Design and modeling systems

Kinematic modeling of series, parallel and flexible mechanisms.

Identifying strategies for kinematic parameters.

Evaluation methods and error correction.

3) Experimental techniques for control and verification of manufacturing systems.

Standardization. Modelling of production systems

direct verification

indirect verification

4) Computational methods of optimization in Manufacturing Engineering.

Mathematical modeling: variables, objectives, constraints.

Types of optimization problems in manufacturing engineering.

Definition of objectives.

Algorithms.

5) Cases of application.

Lab practices

1) modeling and identification (I). kinematic modeling of an articulated arm coordinate measuring machine

2) Modelling and identification (II). Procedures for data capture and analysis for parameter identification.

3) Modelling and identification (III). Parameter identification and calibration of an articulated arm coordinate measuring.

4) Experimental data capture techniques in machine tool.

5) Adaptation of optimization algorithms to design systems (I): identifying variables, objective function and coding.

6) Adaptation of optimization algorithms to design systems (II): development of algorithms and parameter setting.

5.3. Program

Theoretical and practical agenda

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5.4.Planning and scheduling

Schedule sessions and presentation of works 6.0 ECTS : 120 hours / student 18 h . masterclass 4 h. problems 18 h . practical sessions (6 sessions of 3 hours) 20 h tutored development 88 h . practical work 2 h. job submission

5.5.Bibliography and recomended resources

No bibliographic records for this subject