

25841 - Design and development of plate pieces

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	271 - Bachelor's Degree in Industrial Design and Product Development Engineering
ECTS	5.0
Course	
Period	Second Four-month period
Subject Type	Optional
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:

The proposed methodology seeks to promote student work and continued focus on the more practical aspects of the design and development of sheet metal components and tube.

In sessions with the whole group the more theoretical aspects are addressed in the form of master class and are completed by the study of real technical cases. Practical work with computer applications developed in smaller groups and will focus on working methodologies that facilitate the completion of the draft of the subject.

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It aims to promote the integral vision of the profession allowing students to integrate this blueprint with others so that you have finally completed over the development of a product concept.

5.2.Learning activities

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

Theoretical and practical agenda

Lab practices

5.3.Program

Theoretical and practical agenda

- 1) Theoretical Foundations of sheet metal forming.
relevant mechanical properties in conformation.
Plastic deformation: deformation modes and yield criteria.
Materials deformation of metal foils: Types and coatings.
- 2) design of sheet metal parts and tube.
Types of parts. General design rules.
Specialized CAD functionality and application of CAD solid modeling and surfaces.
- 3) Process of forming sheet and tube.
cut
Bending, profiling, bending
Drawing, drawn
Hydroforming and other
- 4) Process Planning forming sheet and tube.
Manufacturing systems (presses and other machines forming.
Forming tooling tube.
Forming tooling plate.
Classification matrices: conventional, progressive dies.
Matrix components.
- 5) Assessing the feasibility of manufacturing the component using simulation techniques.

Lab practices

- 1) specialized CAD mechanical design of sheet metal parts and tube.
- 2) generic mechanical CAD for part design and forming dies.
- 3) mechanical CAD design specialist for progressive dies.
- 4) Workshop conformation.
- 5) CAE specialized feasibility analysis of complex forming processes.
- 6) CAE generic processes applied to simple conformation.

5.4.Planning and scheduling

Schedule sessions and presentation of works

Subject of 5 ECTS: 125 hours / student distributed as follows
15 h. master class (theoretical) and 15 h of technical cases and troubleshooting
20 h. practical sessions (10 sessions of 2 contact hours) in small groups
20 h. theoretical study 50 h. practical work
5 h. theoretical and practical controls

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week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
theory		1	2	2	3	3	4	4	3	3	5	5	3	3	3
practice / lab			1	2		2	2	3	3	4	5	5	6		

5.5. Bibliography and recommended resources

Bibliografía básica:

1) Apuntes de asignatura

2) Boljanovic V.: Sheet Metal Forming Processes and Die Design. Industrial Press, 2004.

3) Szumera J.: Metal Stamping Process: Your Product from Concept to Customer. Industrial Press, 2002.

4) Marciniak Z.: Mechanics of Sheet Metal Forming. Elsevier Science, 2002.

5) Singh H.: Fundamentals of Hydroforming. SME, 2003.

6) M. Rossi. Estampado en Frío de la Chapa". Editorial Dossat, S.A., Madrid

7) Rowe, G.W, "Conformado de los metales" Ed. Urmo

8) Del Río, J "Deformación plástica de los materiales" Ed. Gustavo Gili, S.A.

Río, Jesús del. Deformación plástica de los materiales : la forja y la laminación en caliente / Jesús del Río .
Barcelona : Gustavo Gili, 1980