



COMILLAS

UNIVERSIDAD PONTIFICIA

ICAI

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CIHS

Syllabus
2025 - 2026

GENERAL INFORMATION

Data of the subject	
Subject name	Manufacturing and Production Technologies
Subject code	DIM-GITI-439
Main program	Bachelor's Degree in Engineering for Industrial Technologies
Quarter	Semestral
Credits	6,0 ECTS
Type	Optativa (Grado)
Department	Department of Mechanical Engineering
Coordinator	Mariano Jiménez Calzado
Schedule	Email
Office hours	Email
Course overview	mjimenez@comillas.edu

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DESCRIPTION OF THE SUBJECT



Contextualization of the subject

Prerequisites

- Previous knowledge of Graphic Expression and use of CAD tools, as well as knowledge of Materials Science

Course contents

Contents

- Introduction to manufacturing technologies. Manufacturing Cycle. Information to establish a manufacturing cycle. Organization of production areas and resources. Technical and functional considerations in the electromechanical area.
- Design and selection of production processes. Types of production processes. Tools for the design and analysis of processes. Production technologies in automated manufacturing environments.
- Dimensional verification techniques. Metrological vocabulary (VIM). Causes of measurement error. Dimensional measuring instruments and their metrological properties.
- Casting processes. Classification. Manufacture of models, cores and molds. molding materials. Design and defectology. Finishing and control of cast parts.
- Sheet metal processes. Cold deformation: punching, bending, drawing. Hot deformation: forging, rolling, drawing and extrusion.
- Welding processes. Types of welding: soft, strong, oxyacetylene, arc with covered electrode, TIG, MIG, resistance, friction, laser. Welding process. Defectology.
- Machining processes. Variables that affect precision. Chip formation. Conventional machine tools and MHCN. Holding tools. Cutting tools. Post-machining processes.
- Advanced transformation processes: Additive manufacturing, technologies and application.
- Process quality control. Analysis tools and quality improvement. Statistical processes control. Processing capacity.
- Job design. Components of the design and study of methods. Work measurement.

EVALUATION AND CRITERIA

The use of AI to produce full assignments or substantial parts thereof, without proper citation of the source or tool used, or without explicit permission in the assignment instructions, will be considered plagiarism and therefore subject to the University's General Regulations.

Evaluation activities	Evaluation criteria	Weight
<ul style="list-style-type: none">• Tests carried out at the end of class in the form of a test or short exercise	<ul style="list-style-type: none">• Understanding of concepts.• Theoretical justification of the practical results.	10
<ul style="list-style-type: none">• Individual practical work.• Group work	<ul style="list-style-type: none">• Compression of concepts.• Selection of manufacturing processes.• Application of verification techniques.	15
	<ul style="list-style-type: none">• Understanding of concepts.	



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<ul style="list-style-type: none">Laboratory reports.	<ul style="list-style-type: none">Laboratory expertise.Justification of practical results.	25
<ul style="list-style-type: none">Final exam	<ul style="list-style-type: none">Differentiation and application of different manufacturing and verification processes.	50

BIBLIOGRAPHY AND RESOURCES

Basic References

- Mariano Jiménez Calzado. APUNTES-PRESENTACIONES MOODLE - ICAI DE INGENIERÍA DE FABRICACIÓN. Fichas técnicas de procesos industriales.
- Mikell Groover. FUNDAMENTOS DE MANUFACTURA MODERNA: MATERIALES, PROCESOS Y SISTEMAS (3ª edición). PRENTICE HALL HISPANOAMERICANA S.A. ISBN 9789688808467

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