



## GENERAL INFORMATION

Data of the subject	
Subject name	Manufacturing and Production Technologies
Subject code	DIM-GITI-439
Main program	<a href="#">Bachelor's Degree in Engineering for Industrial Technologies</a>
Involved programs	Grado en Ingeniería en Tecnologías Industriales y Grado en Administración y Dirección de Empresas [Fourth year]
Quarter	Semestral
Credits	6,0 ECTS
Type	Optional
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
<b>Prerequisites</b>
<ul style="list-style-type: none"><li>• Previous knowledge of Graphic Expression and use of CAD tools, as well as knowledge of Materials Science</li></ul>

## Course contents

Contents
<ul style="list-style-type: none"><li>• 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.</li><li>• Design and selection of production processes. Types of production processes. Tools for the design and analysis of processes. Production technologies in automated manufacturing environments.</li><li>• Dimensional verification techniques. Metrological vocabulary (VIM). Causes of measurement error. Dimensional measuring instruments and their metrological properties.</li><li>• Casting processes. Classification. Manufacture of models, cores and molds. molding materials. Design and defectology. Finishing and control of cast parts.</li><li>• Sheet metal processes. Cold deformation: punching, bending, drawing. Hot deformation: forging, rolling, drawing and extrusion.</li><li>• Welding processes. Types of welding: soft, strong, oxyacetylene, arc with covered electrode, TIG, MIG, resistance, friction, laser. Welding process. Defectology.</li><li>• Machinig processes. Variables that affect precision. Chip formation. Conventional machine tools and MHCN. Holding tools. Cutting tools. Post-machining processes.</li><li>• Advanced transformation processes: Additive manufacturing, technologies and application.</li><li>• Process quality control. Analysis tools and quality improvement. Statistical processes control. Processing capacity.</li><li>• Job design. Components of the design and study of methods. Work measurement.</li></ul>

## EVALUATION AND CRITERIA

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



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