



GENERAL INFORMATION

| Data of the subject | |
|---------------------|--|
| Subject name | Manufacturing Engineering |
| Subject code | DIM-GITI-441 |
| Main program | Bachelor's Degree in Engineering for Industrial Technologies |
| Involved programs | Grado en Ingeniería en Tecnologías Industriales [Fourth year] |
| Credits | 6,0 ECTS |
| Type | Optional |
| Department | Department of Mechanical Engineering |
| Coordinator | Mariano Jiménez Calzado |

| Teacher Information | |
|---------------------|--------------------------------------|
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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. Manufacturing Cycle. Information to establish a manufacturing cycle. Organization of production areas and resources. Technical and functional considerations in the electrical and mechanical field.
- 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 and precision. Chip formation. Conventional machine tools. Holding tools. Cutting tools. Post-machining processes.
- Advanced transformation processes: additive manufacturing, technologies and application.

EVALUATION AND CRITERIA

| 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"> • Laboratory reports. | <ul style="list-style-type: none"> • Understanding of concepts. • 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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