

## DIM-GITI-441 MANUFACTURING TECHNOLOGIES

**SEMESTER:** Spring

**CREDITS:** 6 ECTS

**LANGUAGE:** Spanish

**DEGREES:** GITI

### Course overview

This course provides students ability to implement systems and manufacturing processes, metrology and quality control of industrial equipment about mechanical speciality.

When completing the course, students will:

- Analyze the necessary information included in the documentation of a product to choose the manufacturing process of it.
- Identify the manufacturing processes for the transformation of metals.
- Select the appropriate manufacturing process for a mechanical component under technical criteria.
- Handle technical terminology related to manufacturing processes.

### Prerequisites

There are no formal prerequisites to prevent this course. However is recommended concepts about mechanical drawing and tolerances.

### Course contents

#### Theory:

1. Principles of transformation processes I. Introduction to manufacturing engineering. Forming parts through casting processes.
2. Principles of transformation processes II. Conformation of parts by forming processes.
3. Principles of transformation processes III. Conformation of parts by welding processes.
4. Principles of transformation processes IV. Conformation of parts by metal cutting processes.

5. Advanced transformation processes. Electro-erosion: application and key concepts. Processing of plastics. Considerations for the design of plastic parts. Injection molding machine. Constitution and function of the molds. Mold design

### Laboratory:

- P1. Casting: sand, lost wax.
- P2. Forming: press, blender, etc.
- P3. Welding: TIG, MIG, SMAW, etc.
- P4. Injection molding (plastics).
- P5. Conventional metal cutting: lathe, milling, grinding.
- P6. Advanced metal cutting: CNC tools machines.

### Textbook

- Mariano Jiménez Calzado. APUNTES 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

### Grading

The following conditions must be accomplished to pass the course:

- A minimum overall grade of at least 5 over 10.

The overall grade is obtained as follows:

- Standard evaluation at the end of the term:
  - 10% Midterms exams.
  - 10% Homework.
  - 30% Lab reports.
  - 50% End of term exam (paper). A minimum grade in the final exam of 4 over 10.
- Attendance: minimum 85% to be allowed to take the exam.
- Additional evaluation during July (for those who do not pass at the end of the term):
  - 30% Lab reports.
  - 70% July exam (paper)