

Academic Year: (2022 / 2023)

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Department assigned to the subject: Materials Science and Engineering and Chemical Engineering Department

Coordinating teacher: VELASCO LOPEZ, FRANCISCO JAVIER

Type: Electives ECTS Credits : 6.0

Year : Semester :

DESCRIPTION OF CONTENTS: PROGRAMME

1. MATERIALS SELECTION

- 1.1. Introduction
- 1.2. Process of design and materials selection
- 1.3. Methods of materials selection.
- 1.4. Design and selection for mechanical properties
- 1.5. Design and selection for functional properties
- 1.6. Environmental aspects of materials selection
- 1.7. Methods of manufacturing process selection
- 1.8. Rapid prototyping and additive manufacturing

2. MATERIALS FOR DIFFERENT INDUSTRIES

- 2.1. Automotive industry
- 2.2. High-technology processes for automotive industry
- 2.3. Aeronautics industry
- 2.4. Aerospace industry

3. MATERIALS WITH TECHNOLOGICAL INTEREST AND THEIR APPLICATIONS.

- 3.1. Metallic foams
- 3.2. Intermetallics
- 3.3. Carbon-based materials
- 3.4. Nanomaterials
- 3.5. Phase change materials

LEARNING ACTIVITIES AND METHODOLOGY

AF1. THEORETICAL-PRACTICAL CLASSES. Knowledge and concepts students must acquire. Receive course notes and will have basic reference texts. Students partake in exercises to resolve practical problems

AF2. TUTORING SESSIONS. Individualized attendance (individual tutoring) or in-group (group tutoring) for students with a teacher. Subjects with 6 credits have 4 hours of tutoring/ 100% on-site attendance.

AF3. STUDENT INDIVIDUAL WORK OR GROUP WORK. Subjects with 6 credits have 98 hours/0% on-site.

AF8. WORKSHOPS AND LABORATORY SESSIONS. Subjects with 3 credits have 4 hours with 100% on-site instruction. Subjects with 6 credits have 8 hours/100% on-site instruction.

AF9. FINAL EXAM. Global assessment of knowledge, skills and capacities acquired throughout the course. It entails 4 hours/100% on-site

AF8. WORKSHOPS AND LABORATORY SESSIONS. Subjects with 3 credits have 4 hours with 100% on-site instruction. Subjects with 6 credits have 8 hours/100% on-site instruction.

MD1. THEORY CLASS. Classroom presentations by the teacher with IT and audiovisual support in which the subject's main concepts are developed, while providing material and bibliography to complement student learning

MD2. PRACTICAL CLASS. Resolution of practical cases and problem, posed by the teacher, and carried out individually or in a group

MD3. TUTORING SESSIONS. Individualized attendance (individual tutoring sessions) or in-group (group tutoring sessions) for students with teacher as tutor. Subjects with 6 credits have 4 hours of tutoring/100% on-site.

MD6. LABORATORY PRACTICAL SESSIONS. Applied/experimental learning/teaching in workshops and laboratories under the tutor's supervision.

ASSESSMENT SYSTEM

% end-of-term-examination/test: 60

% of continuous assessment (assignments, laboratory, practicals...): 40

SE1. FINAL EXAM. Global assessment of knowledge, skills and capacities acquired throughout the course. The percentage of the evaluation varies for each subject between 60% and 0%.

SE2. CONTINUOUS EVALUATION. Assesses papers, projects, class presentations, debates, exercises, internships and workshops throughout the course. The percentage of the evaluation varies for each subject between 40% and 100% of the final grade.