

GUÍA DOCENTE ABREVIADA DE LA ASIGNATURA

G1901 - Materials

Grado en Ingeniería Mecánica

Curso Académico 2023-2024

| 1. DATOS IDENTIFICATIVOS | | | | |
|--------------------------|---|----------------------|-------------------|----------------------|
| Título/s | Grado en Ingeniería Mecánica | | Tipología v Curso | Obligatoria. Curso 2 |
| Centro | Escuela Técnica Superior de Ingenieros Industriales y de Telecomunicación | | | |
| Módulo / materia | MATERIA MATERIALES MÓDULO COMÚN A LA RAMA INDUSTRIAL | | | |
| Código y denominación | G1901 - Materials | | | |
| Créditos ECTS | 6 | Cuatrimestre | Cuatrimestral (1) | |
| Web | | | | |
| Idioma de impartición | Inglés | Forma de impartición | Presencial | |

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|----------------------|--|--|--|
| Departamento | DPTO. CIENCIA E INGENIERIA DEL TERRENO Y DE LOS MATERIALES | | |
| Profesor responsable | JOSE ANTONIO CASADO DEL PRADO | | |
| E-mail | jose.casado@unican.es | | |
| Número despacho | E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 0. DESPACHO (0009) | | |
| Otros profesores | BORJA ARROYO MARTINEZ ISRAEL ENRIQUE SOSA YEPEZ | | |

3.1 RESULTADOS DE APRENDIZAJE

- Correlate the processing techniques, the structure, and the properties with the behavior of the materials.
- Acquire basic knowledge of the different families of materials commonly used in industrial applications
- Define, analyze, evaluate and compare the physical-mechanical properties of industrial and construction materials.
- Know the basic techniques of production, conformation and transformation of industrial materials.

4. OBJETIVOS

- Correlate the processing techniques, the structure, and the properties with the behavior of the materials.
- Acquire basic knowledge of the different families of materials commonly used in industrial applications .
- Define, analyze, evaluate and compare the physical-mechanical properties of industrial and construction materials.
- Know the basic techniques of production, conformation and transformation of industrial materials.

6. ORGANIZACIÓN DOCENTE

CONTENIDOS

| | |
|---|--|
| 1 | <p>Block I.- FUNDAMENTALS OF MATERIALS SCIENCE</p> <p>Lesson 1.- Introduction to Materials. Description, composition, properties and applications</p> <p>Lesson 2.- Hooke's Law. Analysis of physical properties</p> <p>Lesson 3.- Crystalline and Amorphous Structure. Structure and behavior</p> <p>Lesson 4.- Tensile Strength and Hardness</p> <p>Lesson 5.- Fast Fracture and Toughness</p> <p>Lesson 6.- Fatigue Failure</p> <p>Lesson 7.- Creep</p> <p>Lesson 8.- Oxidation and Corrosion</p> |
| 2 | <p>Block II.- FUNDAMENTALS OF MATERIALS TECHNOLOGY</p> <p>Lesson 9.- Phase diagrams</p> <p>Lesson 10.- Iron Alloys</p> <p>Lesson 11.- Other Metal Alloys</p> <p>Lesson 12.- Treatments</p> <p>Lesson 13.- Production and Conformation of metals. Processes for the production of pieces.</p> <p>Lesson 14.- Ceramics and Glasses</p> <p>Lesson 15.- Polymers</p> <p>Lesson 16.- Composite Materials</p> <p>Lesson 17.- Mortars and Concrete</p> <p>Lesson 18.- Materials Selection</p> |

7. MÉTODOS DE LA EVALUACIÓN

| Descripción | Tipología | Eval. Final | Recuper. | % |
|----------------------|----------------|-------------|----------|---------------|
| BLOCK I assessment | Examen escrito | No | Sí | 40,00 |
| BLOCK II assesment | Examen escrito | No | Sí | 40,00 |
| Continuous Assesment | Otros | No | No | 20,00 |
| TOTAL | | | | 100,00 |

Observaciones

The final grade of the subject will be obtained by means of the following formula:
 $0,4 \cdot (\text{grade Block I}) + 0,4 \cdot (\text{grade Block II}) + \text{Continuous Evaluation grade (maximum 2 points)}$
 The grade of the Continuous Evaluation will be saved for the February Call for all those students who do not pass the Subject in the January Call. Neither of the two blocks will be saved for later courses.

The uncertainty associated with the possible non-compliance with the social distancing decreed by the health authorities may condition the evaluation system. If necessary, the assessment may be adapted to the use of the most appropriate telematic means available, in order to measure the knowledge of the students about theoretical and practical concepts.

Criterios de evaluación para estudiantes a tiempo parcial

In general, the evaluation of part-time students will be based on what is established for this purpose in the Evaluation Regulations of the University of Cantabria. In any case, the unique circumstances of each student who is in this situation will be assessed individually and the right of these students to overcome the subject in a unique evaluation process will be guaranteed.

8. BIBLIOGRAFÍA Y MATERIALES DIDÁCTICOS

BÁSICA

- ASHBY and JONES. Engineering Materials 1 (Fourth Edition). An Introduction to Properties, Applications and Design. Elsevier, 2012.
- ASHBY and JONES. Engineering Materials 2 (Third Edition). An Introduction to Microstructures, Processing and Design. Elsevier, 2006.
- ASKELAND: "The science and engineering of materials". Sixth Edition. Cengage Learning, 2010.
- FLINN and TROJAN: "Engineering Materials and Their Applications". John Wiley and Sons (WIE). Fourth Edition, 1995.
- CALLISTER: "Materials Science and Engineering. An Introduction". John Wiley & Sons, 2007.
- ASHBY M, F. "Materials Selection in Mechanical Desing", Ed Pergamon Press, Oxford

Esta es la Guía Docente abreviada de la asignatura. Tienes también publicada en la Web la información más detallada de la asignatura en la Guía Docente Completa.