1. BASIC INFORMATION

Course	Materials engineering
Degree program	Bachelor's Degree in Industrial Systems Engineering
School	School of Architecture, Engineering, Science and Computing
Year	3º
ECTS	6
Credit type	Elective
Language(s)	English
Delivery mode	Face to face
Semester	S1
Academic year	25-26
Coordinating professor	José Luis Aguilar García

2. PRESENTATION

Technology of Materials is a third-year subject located within the Materials Engineering subject area, which complements Materials Science subject. In this course the student will learn the industrial manufacturing processes of various components, from raw materials or semi-finished products. The students will understand the influence of the transformation processes on the characteristics of the products obtained and how to analyze the failures in service. All this will allow them to improve the products by refining the design cycles.

3. LEARNING OUTCOMES

Skills

SK14: Knowledge and Skills for the Application of Materials Engineering

- Evaluate the most suitable material for a specific application by analysing its mechanical properties, availability, manufacturability, etc.
- Analyze forming and processing techniques in the industrial sector
- Understand the behavior of materials in service: aging, corrosion, etc.
- Analysis and inspection of the most common joining techniques: welding and adhesives.

Competences

CP14: Integrate analysis with critical thinking in a process of evaluating different ideas or professional possibilities and their potential for error, based on evidence and objective data that lead to effective and valid decision-making.

4. CONTENT

- Material selection
- Raw material for forming processes
- Forming processes and their effect on material properties
- Joining processes and characterization of the different types of joints
- Analysis of the in-service behavior of materials

5. TEACHING-LEARNING METHODOLOGIES

The types of teaching-learning methodologies used are indicated below:

- Master class
- Problems-based learning
- Workshop-based learning

6. LEARNING ACTIVITIES

Listed below are the types of learning activities and the number of hours the student will spend on each one:

Campus-based mode:

Learning activity	Number of hours
Master class	10
Seminars	20
Problem solving	34
Written reports and essays	6
Workshop and/or laboratories activities	10
Self-study	60
Debates	5
Evaluation tests	5
TOTAL	**150**

7. ASSESSMENT

Listed below are the assessment systems used and the weight each one carries towards the final course grade:

Campus-based mode:

Sistema de evaluación	Peso mín. %	Peso máx. %
Assessment tests	50	60
Reports	10	20
Case study or problem solving	20	30
Performance evaluation	5	5

When you access the course on the *Campus Virtual*, you'll find a description of the assessment activities you have to complete, as well as the delivery deadline and assessment procedure for each one.
Further details about the AI-use policy will be published through the virtual campus platform once the course has started.

8. SCHEDULE

This table shows the delivery deadline for each assessable activity in the course:

Campus-based mode:

Assessable activities	Deadline
Activity 1. Problem solving, case study, laboratory reports, workshops.	Week 1 – 18
Activity 2. Active participation in problem solving.	Week 1 – 18
Activity 3. Midterm exam.	Week 9 – 10
Activity 4. Final exam.	Week 17 - 18

This schedule may be subject to changes for logistical reasons relating to the activities. The student will be notified of any change as and when appropriate.

9. BIBLIOGRAPHY

The main reference work for this subject is:

- Fundamentals of modern manufacturing: materials, processes and systems / / Mikell P. Groover; Editor: México, D.F.: McGraw-Hill Interamericana, 2007.

The recommended Bibliography is:

- Tecnología de materiales / Carlos Ferrer Giménez, Vicente Amigó Borrás, Editor: Valencia: Universidad Politécnica de Valencia, 2003.
- Introduction to manufacturing processes and materials / Robert C. Creese A., Editor: New York: Marcel Dekker, 1999.
- Materials and processes in manufacturing / E. Paul DeGarmo, J.T. Black, Ronald A. Kohser, Editor: Upper Saddle River (New Jersey): Prentice Hall, cop. 1997.

10. EDUCATIONAL GUIDANCE, DIVERSITY AND INCLUSION UNIT

From the Educational Guidance, Diversity and Inclusion Unit we offer support to our students throughout their university life to help them reach their academic achievements. Other main actions are the students inclusions with specific educational needs, universal accessibility on the different campuses of the university and equal opportunities.

From this unit we offer to our students:

1. Accompaniment and follow-up by mean of counselling and personalized plans for students who need to improve their academic performance.
2. In terms of attention to diversity, non-significant curricular adjustments are made in terms of methodology and assessment for those students with specific educational needs, pursuing equal opportunities for all students.
3. We offer students different extracurricular resources to develop different competences that will encourage their personal and professional development.
4. Vocational guidance through the provision of tools and counselling to students with vocational doubts or who believe they have made a mistake in their choice of degree.

Students in need of educational support can write to us at:

orientacioneducativa@universidadeuropea.es

11. ONLINE SURVEYS

Your opinion matters!

The Universidad Europea encourages you to participate in several surveys which help identify the strengths and areas we need to improve regarding professors, degree programs and the teaching-learning process.

The surveys will be made available in the “surveys” section in virtual campus or via e-mail.

Your assessment is necessary for us to improve.

Thank you very much for your participation.