

Course guide 295753 - 295EM031 - Experimentation in Materials Science and Engineering

Last modified: 02/10/2025

Unit in charge: Barcelona East School of Engineering

Teaching unit: 702 - CEM - Department of Materials Science and Engineering.

Degree: MASTER'S DEGREE IN MATERIALS SCIENCE AND ADVANCED MATERIALS ENGINEERING (Syllabus 2019).

(Compulsory subject).

ERASMUS MUNDUS MASTER'S DEGREE IN ADVANCED MATERIALS SCIENCE AND ENGINEERING (Syllabus

2021). (Optional subject).

Academic year: 2025 ECTS Credits: 6.0 Languages: Spanish

LECTURER

Coordinating lecturer: JESICA CALVO MUÑOZ

Others: Primer quadrimestre:

JESICA CALVO MUÑOZ - Grup: T1 NICOLAS CANDAU - Grup: T1 SEYED MAHMOOD FATEMI - Grup: T1 JAVIER GÓMEZ MONTERDE - Grup: T1 JAUME PUJANTE AGUDO - Grup: T1

BLAS SORITA LLEDO - Grup: T1

PRIOR SKILLS

The ones adquired during the Master

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

CEMCEAM-01. (ENG) Dissenyar i desenvolupar productes, processos i sistemes, aixó com l'optimització d'altres ja desenvolupats, atenent a la selecció de materials per aplicacions específiques.

CEMCEAM-03. (ENG) Realizar estudios de caracterización y evaluación de materiales según sus aplicaciones

Transversal:

05 TEQ N3. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.

TEACHING METHODOLOGY

This is a project based subject. Students will be faced to develop four different projects during the course. Results will be presented in different ways. All projects will have a strong experimental approach.

LEARNING OBJECTIVES OF THE SUBJECT

This is a project-based subject. The objective is for the students to tackle 4 different challenges in which they should solve in a group. In these projects must apply the knowledge acquired in the different subjects of the master. In addition, transversal competences will be worked on (oral, written communication, group work, etc ...).

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STUDY LOAD

Туре	Hours	Percentage
Hours small group	54,0	36.00
Self study	96,0	64.00

Total learning time: 150 h

CONTENTS

Metallic component identification

Description:

From a given piece of metal, students should 1) identify the alloy 2) Expain the most probable processing route

Specific objectives:

Characterize metallic parts

Writting of reports

Full-or-part-time: 37h 30m

Practical classes: 15h Self study: 22h 30m

Plastic Lab

Description:

From a plastic film given to each group, the objective is to report the processing route and the type of plastic used

Related activities:

Thickness

IR

DSC

Tensile test

Tear test

Full-or-part-time: 37h 30m Laboratory classes: 15h Self study: 22h 30m

Fabrication of an emmaneled Mug

Description:

produce by slip casting a ceramic mug, and apply an emmanel $% \left(1\right) =\left(1\right) \left(1\right)$

Full-or-part-time: 37h 30m Laboratory classes: 15h Self study: 22h 30m

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Metal Casting

Description:

The objective of this exercise is to manufacture metal parts by casting. The material is a tin-lead alloy. The team will define which component it wants to melt (it has to be a real component or part, with a real application) before doing it and it will decide the processing route to follow.

Full-or-part-time: 37h 30m Laboratory classes: 15h Self study: 22h 30m

GRADING SYSTEM

Each project will be independently evaluated. The final grade will be the average of the four project. No second chances.

EXAMINATION RULES.

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