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

Last modified: 04/06/2026

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: 2026 **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, això 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 ...).

STUDY LOAD

Type	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

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

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

Any academic fraud, plagiarism or use or possession of unauthorised means in an assessment activity leads to a mark of zero (0) for the affected test or assignment. Furthermore, in accordance with the University's regulations, if disciplinary proceedings are initiated the subject is recorded as "Pending Assessment" until a decision is reached. These incidents are managed in accordance with the **Action Framework for Academic Integrity in Assessment at the UPC**.

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

EXAMINATION RULES.

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