



## Course guide

# 295753 - 295EM031 - Experimentation in Materials Science and Engineering

Last modified: 08/08/2024

<b>Unit in charge:</b>	Barcelona East School of Engineering	
<b>Teaching unit:</b>	702 - CEM - Department of Materials Science and Engineering.	
<b>Degree:</b>	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).	
<b>Academic year:</b> 2024	<b>ECTS Credits:</b> 6.0	<b>Languages:</b> Spanish

## LECTURER

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**Coordinating lecturer:** JESICA CALVO MUÑOZ

**Others:** Primer quadrimestre:  
JESICA CALVO MUÑOZ - Grup: T1  
NICOLAS CANDAU - Grup: T1  
SEYED MAHMOOD FATEMI - Grup: T1  
ALFONSO DAVID LOAEZA BECERRIL - Grup: T1  
JAUME PUJANTE AGUDO - Grup: T1  
MARC SERRA FANALS - Grup: T1

## PRIOR SKILLS

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The ones acquired during the Master

## DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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### Specific:

CEMCEAM-01. (ENG) Dissenyar i desenvolupar productes, processos i sistemes, així 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

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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

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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) Explain 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

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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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