

## Course guide

# 240EM031 - 240EM031 - Laboratory of Materials Science and Technology

Last modified: 14/06/2023

<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>	ERASMUS MUNDUS MASTER'S DEGREE IN ADVANCED MATERIALS SCIENCE AND ENGINEERING (Syllabus 2014). (Optional subject).	
<b>Academic year:</b> 2023	<b>ECTS Credits:</b> 4.5	<b>Languages:</b> Spanish

### LECTURER

<b>Coordinating lecturer:</b>	EMILIO JIMENEZ PIQUÉ
<b>Others:</b>	Primer quadrimestre: EMILIO JIMENEZ PIQUÉ - T11

### PRIOR SKILLS

The ones adquired during the Master

### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

#### Specific:

CEMCEM-02. (ENG) Dissenyar i desenvolupar productes, processos, sistemes i serveis, així com l'optimització d'altres ja desenvolupats, atenent a la selecció de materials per a aplicacions específiques

CEMCEM-04. (ENG) Realitzar estudis de caracterització, avaluació i certificació de materials segons les seves aplicacions

#### 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	40,5	100.00

**Total learning time:** 40.5 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 projects.  
No second chances.

## EXAMINATION RULES.

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