Course guide
240EM031 - 240EM031 - Laboratory of Materials Science and Technology

Last modified: 27/05/2024

Unit in charge: Barcelona East School of Engineering
Teaching unit: 702 - CEM - Department of Materials Science and Engineering.

Degree: ERASMUS MUNDUS MASTER'S DEGREE IN ADVANCED MATERIALS SCIENCE AND ENGINEERING (Syllabus 2014). (Optional subject).

Academic year: 2024 **ECTS Credits:** 4.5 **Languages:** Spanish

LECTURER

Coordinating lecturer: EMILIO JIMENEZ PIQUÉ

Others: 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) 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

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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