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

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: 2022  ECTS Credits: 6.0  Languages: Spanish

LECTURER
Coordinating lecturer: EMILIO JIMENEZ PIQUÉ

Others: Primer quadrimestre:
KIM ALBO SELMA - Grup: T10
NICOLAS CANDAU - Grup: T10
EMILIO JIMENEZ PIQUÉ - Grup: T10
NOEL LEÓN ALBITER - Grup: T10
JAUME PUJANTE AGUDO - Grup: T10
MARC SERRA FANALS - Grup: T10

PRIOR SKILLS
The ones acquired 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, atendent 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**

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours small group</td>
<td>42,0</td>
<td>28.00</td>
</tr>
<tr>
<td>Self study</td>
<td>96,0</td>
<td>64.00</td>
</tr>
<tr>
<td>Guided activities</td>
<td>12,0</td>
<td>8.00</td>
</tr>
</tbody>
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**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
Writing 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

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**GRADING SYSTEM**

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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