Course guides
295765 - 295EM125 - New Challenges in Additivation and Degradation of Plastic Materials

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).
MASTER'S DEGREE IN MATERIALS SCIENCE AND ADVANCED MATERIALS ENGINEERING (Syllabus 2019). (Optional subject).

Academic year: 2021 ECTS Credits: 6.0 Languages: Spanish

LECTURER
Coordinating lecturer: Orlando Santana Pérez
Others: Maria Lluïsa Maspoch
Jonathan Cailloux
Profesores invitados (conferencias).

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-02. (ENG) Aplicar métodos innovadores para el diseño, simulación, optimización y control de procesos de producción y transformación de materiales
CEMCEAM-03. (ENG) Realizar estudios de caracterización y evaluación de materiales según sus aplicaciones
CEMCEAM-05. (ENG) Interpretar y aplicar normativas y especificaciones relativas a los materiales y sus aplicaciones
CEMCEAM-06. (ENG) Evaluar el tiempo de vida en servicio, la reutilización, la recuperación y el reciclaje de productos atendiendo a las características de los materiales que lo conforman

Transversal:
02 SCS. SUSTAINABILITY AND SOCIAL COMMITMENT. Being aware of and understanding the complexity of social and economic phenomena that characterize the welfare society. Having the ability to relate welfare to globalization and sustainability. Being able to make a balanced use of techniques, technology, the economy and sustainability.
05 TEQ. TEAMWORK. Being able to work as a team player, either as a member or as a leader. Contributing to projects pragmatically and responsibly, by reaching commitments in accordance to the resources that are available.
06 URI. EFFECTIVE USE OF INFORMATION RESOURCES. Managing the acquisition, structure, analysis and display of information from the own field of specialization. Taking a critical stance with regard to the results obtained.
07 AAT. SELF-DIRECTED LEARNING. Detecting gaps in one's knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one's knowledge.

TEACHING METHODOLOGY
LEARNING OBJECTIVES OF THE SUBJECT

1. Study the main requirements for ecodesign and circular economy in polymeric materials.
2. Know the main families of thermoplastics, both fossil and biobased, their relevant characteristics and challenges related to eco-design and circular economy: structure, special properties and technological aspects.
3. Introduce the main families of elastomers, their most relevant characteristics and challenges related to eco-design and circular economy.
4. Know the main mechanisms of thermo-oxidative degradation, UV.
5. Know the main stabilization additives against degradation-decomposition and the challenges that arise from the eco-design and circular economy.
6. Introduce technological aspects and European initiatives related to the revaluation of polymer material recycled.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guided activities</td>
<td>6,0</td>
<td>4.00</td>
</tr>
<tr>
<td>Self study</td>
<td>102,0</td>
<td>68.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>14,0</td>
<td>9.33</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>28,0</td>
<td>18.67</td>
</tr>
</tbody>
</table>

Total learning time: 150 h

CONTENTS

<table>
<thead>
<tr>
<th>title english</th>
<th>Description:</th>
<th>content english</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-or-part-time: 10h 30m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Theory classes: 9h</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Laboratory classes: 1h 30m</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>title english</th>
<th>Description:</th>
<th>content english</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-or-part-time: 3h</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Theory classes: 3h</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>title english</th>
<th>Description:</th>
<th>content english</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-or-part-time: 6h</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Theory classes: 3h</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Laboratory classes: 3h</td>
<td></td>
</tr>
</tbody>
</table>
**Full-or-part-time:** 7h 30m  
Theory classes: 6h  
Laboratory classes: 1h 30m

---

**Full-or-part-time:** 10h 30m  
Theory classes: 10h 30m

---

**GRADING SYSTEM**

---

**BIBLIOGRAPHY**

**Basic:**

**Complementary:**