### Degree competences to which the subject contributes

#### Specific:
- CEMCEM-04. (ENG) Realitzar estudis de caracterització, avaluació i certificació de materials segons les seves aplicacions
- CEMCEM-12. (ENG) Adaptar-se als canvis estructurals de la societat motivats per factors o fenòmens de indole econòmic, energètic o natural, per resoldre els problemes derivats i aportar solucions tecnològiques amb un alt compromís de sostenibilitat

#### Transversal:
- 03 TLG. THIRD LANGUAGE. Learning a third language, preferably English, to a degree of oral and written fluency that fits in with the future needs of the graduates of each course.

### Learning objectives of the subject

Transportation is an engineering field where the correct selection of materials is vital for the performance of vehicles. The students should understand the specific requirements of critical components in vehicles, translate them into materials' properties and select among the existing materials the ones able to fulfil the specifications.
## Study load

<table>
<thead>
<tr>
<th></th>
<th>Hours large group:</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Total learning time:</td>
<td>112h 30m</td>
<td>0h</td>
</tr>
<tr>
<td>Hours medium group:</td>
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<td>27h</td>
</tr>
<tr>
<td>Hours small group:</td>
<td></td>
<td>13h 30m</td>
</tr>
<tr>
<td>Guided activities:</td>
<td></td>
<td>0h</td>
</tr>
<tr>
<td>Self study:</td>
<td></td>
<td>72h</td>
</tr>
</tbody>
</table>
# 240EM143 - Materials with Transport Applications

## Content

<table>
<thead>
<tr>
<th>Section</th>
<th>Learning time: 45h</th>
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</table>
| 1. Materials for automobile applications | Theory classes: 12h  
Guided activities: 6h  
Self study: 27h |
| 2. Materials for aeronautic applications | Theory classes: 12h  
Guided activities: 6h  
Self study: 27h |
| 3. Materials for railway transportation applications | Theory classes: 4h 30m  
Self study: 6h 30m |

### Description:
- **1. Materials for automobile applications**: The main materials used for the Body-in-White, as well as for engine parts will be presented.
- **2. Materials for aeronautic applications**: The main materials used for the fuselage, as well as for turbines will be presented.
- **3. Materials for railway transportation applications**: The main materials used in trains and railways will be described.

### Related activities:
- In addition to the lectures, the students will work on activities related to the subject, mainly preparing presentations and analysing articles related to the subject.

### Specific objectives:
- **1. Materials for automobile applications**: The main requirements for the Body-in-White, which is the structure of vehicles for road transportation, as well as for engine parts will be explained and the materials providing an optimal behaviour according to the requirements will be presented.
- **2. Materials for aeronautic applications**: The main requirements for the fuselage, which is the structure of aeroplanes, as well as for turbine parts will be explained and the materials providing an optimal behaviour according to the requirements will be presented.
- **3. Materials for railway transportation applications**: The main requirements for trains and related structures, such as railways, will be explained and the materials providing an optimal behaviour according to the requirements will be presented.
4. Materials for boats

Description:
The main materials used in boats of different kinds will be described.

Related activities:
In addition to the lectures, the students will work on activities related to the subject, mainly preparing presentations and analysing articles related to the subject.

Specific objectives:
The main requirements for boats will be explained and the materials providing an optimal behaviour according to the requirements will be presented.

Qualification system

35% midterm exam 1 + 35% midterm exam 2 + 15% monographic work and presentation + 15% Activities proposed by the professors

To apply this formula both midterm exams need to be passed (a mark of 5 or plus), otherwise, the student will have to do a final exam which will have a value of 70%.

Regulations for carrying out activities

There will be two midterm exams. The activities proposed by the professor will be problems or activities oriented to work a specific subject. These activities will have to be done at home or during the lecturing time in the class. There will be between 3 and 5 activities during the whole semester, including a monographic work.

Bibliography

Basic:

