340271 - SEMA-D7P02 - Industrial Design Material Selection

Coordinating unit: 340 - EPSEVG - Vilanova i la Geltrú School of Engineering
Teaching unit: 702 - CMEM - Department of Materials Science and Metallurgy
Academic year: 2019
Degree: BACHELOR'S DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING
(Syllabus 2009). (Teaching unit Optional)
ECTS credits: 6
Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: Maite Baile Puig
Others: Maite Baile Puig
Josep A. Picas

Degree competences to which the subject contributes

Specific:
1. D10. Knowledge of beginning of science and material technology to select materials and its processes as well as its repercussion into design, redesign development of products.

Transversal:
2. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.

Teaching methodology

In the theory classes the basic concepts of the subject will be explained. In the classes of problems the basic techniques for the resolution of problems will be explained and the proposed problems will be discussed, from the student's contributions. In the practical exercises will explain the basic knowledge to perform the different proposed tests and the obtained results will be interpreted and discussed.

In the out-class activities the professor supervises the student's work by means of the analysis of his evolution through the evaluation activity and the guided activities.

Learning objectives of the subject

Relating microstructure, processing and properties of materials.
Select materials based on their physical, chemical, thermal and mechanical properties.
Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 45h</th>
<th>30.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Hours small group: 15h</td>
<td>10.00%</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study: 90h</td>
<td>60.00%</td>
</tr>
</tbody>
</table>

Content

(ENG) -  
Degree competences to which the content contributes:

(ENG) Contingut 2: Selecció de materials fèrrics  
Degree competences to which the content contributes:

(ENG) Contingut 3: Selecció de materials metà.l.ics no fèrrics  
Degree competences to which the content contributes:

(ENG) Contingut 4: Selecció de polímers  
Degree competences to which the content contributes:

(ENG) -Contingut 5: Selecció de Ceràmics i Compòsits  
Degree competences to which the content contributes:

(ENG) -Contingut 6: Selecció de Materials intel·ligents i de Biomaterials  
Degree competences to which the content contributes:
### Planning of activities

<table>
<thead>
<tr>
<th>(ENG) ACTIVITAT 1: CLASSE EXPOSITIVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ENG) ACTIVITAT 2: EXERCICIS</td>
</tr>
<tr>
<td>(ENG) ACTIVITAT 3: PRÀCTICA DE SELECCIÓ DE MATERIALS (1)</td>
</tr>
<tr>
<td>(ENG) ACTIVITAT 4: DIAGRAMA D'ACERS (PROGRAMA INFORMÀTIC)</td>
</tr>
<tr>
<td>(ENG) ACTIVITAT 5: PRÀCTICA DE TREMPABILITAT JOMINY</td>
</tr>
<tr>
<td>(ENG) ACTIVITAT 6: QÜESTIONARI MOODLE</td>
</tr>
<tr>
<td>(ENG) ACTIVITAT 7: PRÀCTICA DE MICRODURESES</td>
</tr>
<tr>
<td>(ENG) ACTIVITAT 8: PRÀCTICA DE METAL·LOGRAFIA</td>
</tr>
<tr>
<td>(ENG) ACTIVITAT 9: PRÀCTICA DE SELECCIÓ DE MATERIALS (2)</td>
</tr>
<tr>
<td>(ENG) ACTIVITAT 10: PRÀCTICA DE RECONEXIEMENT DE PLÀSTICS</td>
</tr>
<tr>
<td>(ENG) ACTIVITAT 11: PRÀCTICA DE SELECCIÓ DE MATERIALS (3)</td>
</tr>
<tr>
<td>(ENG) ACTIVITAT 12: TREBALLS EN GRUP PETIT DEL CONTINGUT 6</td>
</tr>
<tr>
<td>(ENG) ACTIVITAT 13: 1ª PROVA DE CONEIXEMENT</td>
</tr>
</tbody>
</table>
(ENG) ACTIVITAT 14: 2ª PROVA DE CONEIXEMENT

<table>
<thead>
<tr>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>6h</td>
</tr>
<tr>
<td>Self study: 3h</td>
</tr>
<tr>
<td>Theory classes: 3h</td>
</tr>
</tbody>
</table>

(ENG) ACTIVITAT 15: PROVA FINAL (TOTS ELS CONTINGUTS)

Qualification system

Individual written tests: 60%
Development of the laboratory practices: 20%
Presentation and evaluation of proposed problems (individual or in group): 10%
Realization and oral presentation of a work on some topic related to the subject (individual or in group): 10%

The laboratory practices, the tests carried out via Campus Digital and the activities carried out in the classroom during the regular period of classes (problems and / or presentations of work) will not be re-evaluated.

The completion and presentation of the corresponding reports of at least 75% of the laboratory practices will be a necessary condition for the approval of the subject. It will also be a necessary condition to have participated in, at least, 75% of the presentations made in the classroom and to have made the evaluations of them.
Bibliography

Basic:


Callister, William D;Rethwisch, David G. Ciencia e ingeniería de materiales. 2a ed. Barcelona [etc.]: Reverté, 2016. ISBN 9788429172515.


Complementary:


Others resources:

Hyperlink

http://www.matter.org.uk/steelmatter/

http://aluminium.matter.org.uk/aluselect/