240508 - Inorganic Chemical Systems Technology Forward

Coordinating unit: 240 - ETSEIB - Barcelona School of Industrial Engineering
Teaching unit: 713 - EQ - Department of Chemical Engineering
Academic year: 2018
Degree: BACHELOR’S DEGREE IN MATERIALS ENGINEERING (Syllabus 2010). (Teaching unit Optional)
ECTS credits: 3
Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: NURIA MIRALLES ESTEBAN
Others: Aleman Llanso, Carlos Enrique

Degree competences to which the subject contributes

Transversal:
1. 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
Teaching is developed through classes including both theoretical presentations and resolution of exercises. Lectures complemented with practical cases that will be resolved in the classroom. Furthermore, independent learning will be promoted through the use of bibliographic material supplied by the teacher. This will allow the student to relate the knowledge acquired in both the theoretical classes and the lectures with the latest technological applications in the field of Engineering.

Learning objectives of the subject

General goal
Relate the chemical principles with technology and environmental impact of recent applications.

Specific goals
- Use of the periodic properties and the chemical bond concept to predict the macroscopic behavior of the chemical elements and their main compounds.
- Understand the principles of some of the most technologically relevant processes involving inorganic and organic chemical compounds, such as chemisorptions, transport, surface phenomena and electrochemical processes.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 75h</th>
<th>Hours large group: 30h</th>
<th>40.00%</th>
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<tbody>
<tr>
<td></td>
<td>Hours medium group: 0h</td>
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<tr>
<td></td>
<td>Hours small group: 0h</td>
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<td>Guided activities: 0h</td>
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<tr>
<td></td>
<td>Self study: 45h</td>
<td>60.00%</td>
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# Content

## 1. DESCRIPTIVE CHEMISTRY AND REDOX PROPERTIES OF THE ELEMENTS

**Learning time:** 10h  
- Theory classes: 3h  
- Practical classes: 2h  
- Self study: 5h

**Description:**  

## 2. ACID-BASE PROPERTIES

**Learning time:** 10h  
- Theory classes: 3h  
- Practical classes: 2h  
- Self study: 5h

**Description:**  

## 3. COORDINATION COMPOUNDS

**Learning time:** 10h  
- Theory classes: 3h  
- Practical classes: 2h  
- Self study: 5h

**Description:**  

## 4. TRANSPORT

**Learning time:** 10h  
- Theory classes: 3h 30m  
- Practical classes: 1h 30m  
- Self study: 5h

**Description:**  
The final mark (NF) is calculated as:

\[ NF = 0.3 \times Np_1 + 0.3 \times Np_2 + 0.4 \times Nef \]

where

- \( Np_1 \): it is the mark corresponding to items 1-3, composed of questions, exercises, presentations and deliverables.
- \( Np_2 \): it is the mark corresponding to items 4-6, composed of questions, exercises, presentations and deliverables.
- \( Nef \): it is Final exam: exam involving the whole subject made of theoretical questions and exercises. The maximal time required by this exam will be 3 hours.
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Bibliography

Complementary:


Others resources:

- Slides used by the teachers (Campus Digital).