Course guide
230453 - QI - Inorganic Chemistry

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 713 - EQ - Department of Chemical Engineering.
Degree: BACHELOR'S DEGREE IN ENGINEERING PHYSICS (Syllabus 2011). (Compulsory subject).
Academic year: 2022  ECTS Credits: 6.0  Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: Consultar aquí / See here:
https://telecos.upc.edu/ca/estudis/curs-actual/professorat-responsables-coordinadors/responsables-assignatura

Others: Consultar aquí / See here:
https://telecos.upc.edu/ca/estudis/curs-actual/professorat-responsables-coordinadors/professorat-assignat-idioma

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. Knowledge of the chemistry laws. Knowledge of the main chemical methods of producing materials and nanomaterials. Ability to conduct and analyze basic chemical reactions.

Generical:
4. ABILITY TO IDENTIFY, FORMULATE, AND SOLVE PHYSICAL ENGINEERING PROBLEMS. Planning and solving physical engineering problems with initiative, making decisions and with creativity. Developing methods of analysis and problem solving in a systematic and creative way.

Transversal:
3. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.
1. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 1. Analyzing the world’s situation critically and systemically, while taking an interdisciplinary approach to sustainability and adhering to the principles of sustainable human development. Recognizing the social and environmental implications of a particular professional activity.
2. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 1. Planning oral communication, answering questions properly and writing straightforward texts that are spelt correctly and are grammatically coherent.

TEACHING METHODOLOGY

Inside class: 2,6 ECTS. Seminal classes (theory + seminars) with the participation of the student. Homework (individual and/or team). Tutorial.
Outside class: 3,4 ECTS. Exercises and projects (theory or seminars).

LEARNING OBJECTIVES OF THE SUBJECT

- Understand and apply the basic concepts of Chemistry related to the atomic and molecular structure and the properties of matter.
- Apply the principles of chemical transformations to the knowledge and calculation of transformed reactants and products obtained.
- Justify the applications of common inorganic compounds.
STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study</td>
<td>85.0</td>
<td>56.67</td>
</tr>
<tr>
<td>Hours large group</td>
<td>65.0</td>
<td>43.33</td>
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</tbody>
</table>

**Total learning time:** 150 h

CONTENTS

Utility of the periodic table

**Description:**
Organization of the periodic table. Periodic properties. Periodicity and physical and structural properties. Relationships between structure and properties.

**Full-or-part-time:** 28h
- Theory classes: 12h
- Guided activities: 4h
- Self study: 12h

The covalent bond

**Description:**

**Full-or-part-time:** 20h
- Theory classes: 10h
- Self study: 10h

The metallic bond

**Description:**

**Full-or-part-time:** 16h
- Theory classes: 8h
- Self study: 8h

The ionic bond

**Description:**

**Full-or-part-time:** 10h
- Theory classes: 5h
- Self study: 5h
Chemical reactions

Description:

Full-or-part-time: 24h
Theory classes: 8h
Guided activities: 8h
Self study: 8h

Acids and bases

Description:

Full-or-part-time: 20h
Theory classes: 8h
Guided activities: 4h
Self study: 8h

Oxidation and reduction

Description:

Full-or-part-time: 20h
Theory classes: 8h
Guided activities: 4h
Self study: 8h

Organometallic compounds

Description:
The organometallic bond. Types of organometallic compounds.

Full-or-part-time: 12h
Theory classes: 6h
Self study: 6h

GRADING SYSTEM

Qualification will include a final exam (EF) and continuous evaluation including a mid-semester exam (EP) and the participation of the student in seminar classes (P). The final qualification will be calculated as follows: \( \max\{\text{EF}, 0.65\times\text{EF} + 0.30\times\text{EP} + 0.05\times\text{P}\} \)
BIBLIOGRAPHY

Basic:

Complementary: