Course guide
240507 - 240507 - Further Chemistry

Unit in charge: Barcelona School of Industrial Engineering
Teaching unit: 713 - EQ - Department of Chemical Engineering.
Degree: BACHELOR'S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Optional subject).
Academic year: 2023 ECTS Credits: 3.0 Languages: Catalan, Spanish

LECTURER
Coordinating lecturer: Garcia Alvarez, Montserrat

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. Spatial vision capacity and knowledge on graphic representation techniques, both with traditional methods of metrical geometry and descriptive geometry, and by means of computer aided design applications.
2. Capacity to understand and apply basic knowledge principles of general chemistry, organic and inorganic chemistry and their engineering applications.

Transversal:
3. 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
The course, with a high experimental content is done through lectures and laboratory sessions and problems.

LEARNING OBJECTIVES OF THE SUBJECT

General goal
Familiarize students with the chemical behavior of organic compounds of industrial and environmental interest.

Specific goals
- Understand the classical methods of chemical analysis systems in industrial and environmental interest.
- Know how to interpret the results of the characterization techniques of chemical compounds

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study</td>
<td>45,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>30,0</td>
<td>40.00</td>
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Total learning time: 75 h
### 1. STRUCTURAL DETERMINATION OF ORGANIC COMPOUNDS

**Description:**

**Full-or-part-time:** 5h  
Theory classes: 2h  
Self study: 3h

### 2. INFRARED SPECTROSCOPY (IR)

**Description:**

**Full-or-part-time:** 7h  
Theory classes: 1h  
Practical classes: 2h  
Self study: 4h

### 3. NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY (NMR)

**Description:**

**Full-or-part-time:** 18h  
Theory classes: 2h  
Practical classes: 5h  
Self study: 11h

### 4. ULTRAVIOLET SPECTROSCOPY (UV) AND MASS SPECTROMETRY

**Description:**

**Full-or-part-time:** 8h  
Theory classes: 2h  
Practical classes: 1h  
Self study: 5h
5. INTRODUCTION TO EXPERIMENTAL METHODS: EXPERIMENTAL SEPARATION OF MIXTURES

Description:

Full-or-part-time: 13h
Theory classes: 3h
Practical classes: 2h
Self study: 8h

6. OBTAINING THE ESSENCE OF CINNAMON

Description:
Separation of an essential oil such as cinemaldehyde by distillation. Liquid-liquid extraction with decanting funnel. Characterization by IR spectroscopy.

Full-or-part-time: 7h
Theory classes: 2h
Practical classes: 1h
Self study: 4h

7. PREPARATION OF THE FOOD ADDITIVE ISOAMYL ACETATE

Description:
Esterification reaction of an alcohol. Isolation by extraction. Structural study by IR spectroscopy.

Full-or-part-time: 10h
Theory classes: 2h
Practical classes: 2h
Self study: 6h

8. EXPERIMENT WITH NATURAL PRODUCTS: VINEGAR AND SUCROSE

Description:

Full-or-part-time: 7h
Theory classes: 2h
Practical classes: 1h
Self study: 4h

GRADING SYSTEM

\[ NF = 0.35 \cdot NL + 0.15 \cdot AL + 0.25 \cdot NAC + 0.25 \cdot NEF \]

NF = Final Note
NL = Note lab sessions (laboratory work + practical reports)
AL = Attendance at laboratory sessions
NAC = Note continuous assessment (attendance + delivery exercises)
NEF = Note final exam
BIBLIOGRAPHY

Complementary:

RESOURCES

Other resources:
- Class notes.