Course guides
230458 - QOB - Organic Chemistry and Biochemistry

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: 2021
ECTS Credits: 6.0
Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: MONTSERRAT GARCIA ALVAREZ
Others: JOSÉ IGNACIO IRIBARREN LACO

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
2. Knowledge of the organic chemistry basis and their use in the production of complex materials and biological systems. Ability to develop the activity in a chemistry lab and produce compounds and/or materials.
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:
3. 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:
2. TEAMWORK - Level 1. Working in a team and making positive contributions once the aims and group and individual responsibilities have been defined. Reaching joint decisions on the strategy to be followed.
4. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.
1. EFFECTIVE USE OF INFORMATION RESOURCES - Level 1. Identifying information needs. Using collections, premises and services that are available for designing and executing simple searches that are suited to the topic.

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

- Justify the reactivity of the main organic functional groups.
- Define and explain the different basic biochemical functions that allows life to exist.
- Characterize chemical compounds with the most common structural identification techniques.
### STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours large group</td>
<td>65,0</td>
<td>43.33</td>
</tr>
<tr>
<td>Self study</td>
<td>85,0</td>
<td>56.67</td>
</tr>
</tbody>
</table>

Total learning time: 150 h

### CONTENTS

#### 1. INTRODUCTION TO ORGANIC COMPOUNDS

**Description:**

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

#### 2. ISOMERISM AND STEREOISOMERISM

**Description:**

**Full-or-part-time:** 16h
- Theory classes: 6h
- Guided activities: 4h
- Self study: 6h

#### 3. ALKANES AND CYCLOALKANES

**Description:**

**Full-or-part-time:** 10h
- Theory classes: 4h
- Guided activities: 2h
- Self study: 4h
### 4. ALKENES AND ALKYNES

**Description:**

**Full-or-part-time:** 8h
- Theory classes: 4h
- Self study: 4h

### 5. AROMATIC HYDROCARBONS

**Description:**

**Full-or-part-time:** 6h
- Theory classes: 3h
- Self study: 3h

### 6. HALOGENATED

**Description:**

**Full-or-part-time:** 8h
- Theory classes: 4h
- Self study: 4h

### 7. ALCOHOLS, PHENOLS AND ETHERS

**Description:**

**Full-or-part-time:** 10h
- Theory classes: 4h
- Guided activities: 2h
- Self study: 4h

### 8. COMPOUNDS CARBONYL. ALDEHYDES AND KETONES

**Description:**

**Full-or-part-time:** 10h
- Theory classes: 4h
- Guided activities: 2h
- Self study: 4h
### 9. CARBOXYLIC ACIDS AND DERIVATIVES

**Description:**

**Full-or-part-time:** 10h  
Theory classes: 4h  
Guided activities: 2h  
Self study : 4h

### 10. AMINES AND RELATED NITROGEN COMPOUNDS

**Description:**
Nucleic acids: nitrogenous bases.

**Full-or-part-time:** 10h  
Theory classes: 4h  
Guided activities: 2h  
Self study : 4h

### 11. SPECTROSCOPY AND STRUCTURAL DETERMINATION

**Description:**

**Full-or-part-time:** 22h  
Theory classes: 12h  
Guided activities: 2h  
Self study : 8h

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**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: \( \max\{EF, 0.65\times EF + 0.30\times EP + 0.05\times P\} \)

**BIBLIOGRAPHY**

**Basic:**  