Course guide
390110 - FQ2 - Chemistry II

Unit in charge: Barcelona School of Agri-Food and Biosystems Engineering
Teaching unit: 745 - DEAB - Department of Agri-Food Engineering and Biotechnology.

Degree: BACHELOR'S DEGREE IN BIOSYSTEMS ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN FOOD ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN AGRONOMIC SCIENCE ENGINEERING (Syllabus 2018). (Compulsory subject).

Academic year: 2022 ECTS Credits: 6.0 Languages: Catalan

LEADER
Coordinating lecturer: Jiménez De Ridder, Patricia
Others: PATRICIA JIMENEZ DE RIDDER
Perez Coronado, Ana Maria
Segui Amortegui, Luis Alberto

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
2. Knowledge of the basic concepts of general chemistry, inorganic and organic chemistry, and ability to use them in engineering applications.

Transversal:
1. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.

TEACHING METHODOLOGY
The hours of learning aimed consist, firstly, to lectures (large group) in which teachers made a exhibition to introduce the learning objectives related to general concepts of the matter.
Later and through exercises we try to motivate and engage students to participate actively in their learning. Moreover, classes can also consist of solving numerical problems or exercises. The final type of hours of learning is to make molecular models classes or laboratory practices in small group, which are generally coupled. These practices are designed as an application of theoretical concepts and develop basic skills with instruments in chemical laboratory and introduce generic competition team.
In general, after each meeting are proposed tasks outside the classroom, such as directed readings and resolution of questions and problems that have to work and are the basis of learning and self-guided.

LEARNING OBJECTIVES OF THE SUBJECT
At the end of Chemistry 2 course, the student should be able to predict:
-the structure, geometry and polarity of molecules from the molecular formula
-the Intermolecular forces that are established between molecules
-the reactions of organic molecules and biomolecules
STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours large group</td>
<td>40,0</td>
<td>26.67</td>
</tr>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>20,0</td>
<td>13.33</td>
</tr>
</tbody>
</table>

Total learning time: 150 h

CONTENTS

MOLECULAR STRUCTURE

Description:
1.1. Chemical bond
1.2. Molecular structure of organic compounds
1.3. Isomerism
1.4. Intermolecular forces

Full-or-part-time: 27h 30m
Theory classes: 11h
Self study: 16h 30m

ORGANIC REACTIONS

Description:
2.1. Reactions of the organic compounds

Related activities:

Full-or-part-time: 37h 30m
Theory classes: 9h
Laboratory classes: 6h
Self study: 22h 30m

BIOMOLECULES

Description:
3.1. Carbohydrates
3.2. Proteins
3.3. Lipids
3.4. Nucleic acids

Related activities:

Full-or-part-time: 42h 30m
Theory classes: 11h
Laboratory classes: 6h
Self study: 25h 30m
## ACTIVITIES

### ACTIVITY 1: CLASSROOM LESSONS

**Full-or-part-time:** 36h  
Theory classes: 36h

### ACTIVITY 2: INDIVIDUAL TESTS

**Full-or-part-time:** 4h  
Theory classes: 4h

### (ENG) ACTIVITY 3: LABORATORY

**Full-or-part-time:** 10h  
Laboratory classes: 10h

### ACTIVITY 4: MOLECULAR MODELS CLASSES

**Full-or-part-time:** 10h  
Laboratory classes: 10h

## GRADING SYSTEM

There will be two individual events in the classroom: a first test (P1, first part) include the first half of the matter and a second test will take two forms: second part (P2) and final (F). Students who have obtained a proof P1 rating equal to or greater than 4, can choose to do the second test or the final one. The other students will do the final. The final grade for the course, Nfinal, will be obtained by one of the following ways:

- N1: test score P1  
- N2: qualification test P2  
- N3: F test score  
- N4: qualification of small group activities

\[
N_{final} = 0.30N_1 + 0.45N_2 + 0.25N_4 \\
\]  

or:

\[
N_{final} = 0.75N_3 + 0.25N_4 \\
\]

In case of failing the course, the final (F) will be reassessed in the extraordinary period of reassessment of tests provided the final grade for the course more than one Absent.
BIBLIOGRAPHY

Basic: