

Course guide

390110 - FQ2 - Chemistry II

Last modified: 21/09/2023

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: 2023 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: Jiménez De Ridder, Patricia

Others: PATRICIA JIMENEZ DE RIDDER

Perez Coronado, Ana Maria
Seguí 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

Type	Hours	Percentage
Hours large group	40,0	26.67
Self study	90,0	60.00
Hours small group	20,0	13.33

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, N_{final} , 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

$$N_{final} = 0.30N1 + 0.45N2 + 0.25N4$$

or:

$$N_{final} = 0.75N3 + 0.25N4$$

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:

- Feduchi Canosa, Elena. Bioquímica : conceptos esenciales. Madrid: Editorial Médica Panamericana, 2010. ISBN 9788498353570.
- Hart, Harold; García Martín, Tomás. Química orgánica. 12ª ed. Madrid [etc.]: McGraw-Hill, 2007. ISBN 9788448156572.
- Saña Vilaseca, Josep. Química per a les ciències de la naturalesa i de l'alimentació. Barcelona: Vicens Vives, 1993. ISBN 8431632828.
- Pando García-Pumarino, Concepción; Iza Cabo, Nerea; Petrucci, Ralph H. Química general : principios y aplicaciones modernas [on line]. 10a ed. Madrid [etc.]: Pearson Prentice Hall, 2011 [Consultation: 15/07/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=6751. ISBN 9788483226803.