



1. General information

Course: BIOMOLECULAR CHEMISTRY

Type: CORE COURSE

Degree: 402 - UNDERGRADUATE DEGREE PROGRAMME IN BIOTECHNOLOGY

Center: 601 - E.T.S. AGRICULTURAL ENGINEERS AND MOUNTS AB

Year: 1

Main language: Spanish

Use of additional
languages:

Web site:

Code: 60605

ECTS credits: 6

Academic year: 2023-24

Group(s): 10

Duration: C2

Second language: English

English Friendly: Y

Bilingual: N

Lecturer: ROSARIO SÁNCHEZ GÓMEZ - Group(s): 10

Building/Office	Department	Phone number	Email	Office hours
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Lecturer: AMAYA ZALACAIN ARAMBURU - Group(s): 10

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2. Pre-Requisites

Not established

3. Justification in the curriculum, relation to other subjects and to the profession

Not established

4. Degree competences achieved in this course

Course competences

Code	Description
CB01	Prove that they have acquired and understood knowledge in a subject area that derives from general secondary education and is appropriate to a level based on advanced course books, and includes updated and cutting-edge aspects of their field of knowledge.
CB02	Apply their knowledge to their job or vocation in a professional manner and show that they have the competences to construct and justify arguments and solve problems within their subject area.
CB03	Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues.
CB04	Transmit information, ideas, problems and solutions for both specialist and non-specialist audiences.
CB05	Have developed the necessary learning abilities to carry on studying autonomously
CE02	Understand the molecular physicochemical principles and their applications in Biotechnology.
CG02	Capacity for analysis and synthesis.
CG03	Ability to work in multidisciplinary teams collaboratively and with shared responsibility.
CG04	Sensitivity towards environmental issues.
CT01	Know a second foreign language.
CT02	Know and apply the Information and Communication Technologies.
CT03	Use correct oral and written communication.
CT04	Know the ethical commitment and professional deontology.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Formulate any inorganic or organic compound of biological relevance and identify its functional groups and its behavior when it is pure and in aqueous solutions.

Apply the concepts of stereochemistry and chirality to simple biomolecules.

Knowing how to use biotechnological improvement strategies for soil microorganisms and those associated with plants.

Know how to predict the basic chemical properties and reactivity of inorganic and organic compounds relevant in biology from the atomic and molecular structure and the nature of the bonds.

Know how to propose basic procedures for the synthesis of organic molecules.

Know how to propose basic protocols for the quantitative analysis of inorganic and organic substances and for the structural elucidation of organic compounds.

6. Units / Contents

Unit 1:

Unit 2:

Unit 3:

Unit 3.1
Unit 3.2
Unit 3.3
Unit 4:
Unit 5:
Unit 6:
Unit 6.1
Unit 7:
Unit 7.1
Unit 8:
Unit 8.1
Unit 9:

7. Activities, Units/Modules and Methodology							
Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	CB01 CB02 CB03 CB04 CB05 CE02 CG02 CG03 CG04 CT01 CT02 CT03 CT04	1.1	27.5	Y	N	
Class Attendance (practical) [ON-SITE]	Practical or hands-on activities	CB01 CB02 CB03 CB04 CB05 CE02 CG02 CG03 CG04 CT01 CT02 CT03 CT04	0.4	10	Y	Y	
Study and Exam Preparation [OFF-SITE]	Self-study	CB01 CB02 CB03 CB04 CB05 CE02 CG02 CG03 CG04 CT01 CT02 CT03 CT04	3.6	90	N	-	
Problem solving and/or case studies [ON-SITE]	Project/Problem Based Learning (PBL)	CB01 CB02 CB03 CB04 CB05 CE02 CG02 CG03 CG04 CT01 CT02 CT03 CT04	0.6	15	Y	Y	
Group tutoring sessions [ON-SITE]	Combination of methods	CB01 CB02 CB03 CB04 CB05 CE02 CG02 CG03 CG04 CT01 CT02 CT03 CT04	0.2	5	N	-	
Formative Assessment [ON-SITE]	Assessment tests	CB01 CB02 CB03 CB04 CB05 CE02 CG02 CG03 CG04 CT01 CT02	0.1	2.5	Y	Y	
Total:			6	150			
Total credits of in-class work: 2.4			Total class time hours: 60				
Total credits of out of class work: 3.6			Total hours of out of class work: 90				

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System			
Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Test	70.00%	85.00%	
Assessment of problem solving and/or case studies	15.00%	0.00%	
Laboratory sessions	15.00%	15.00%	
Total:	100.00%	100.00%	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
Study and Exam Preparation [AUTÓNOMA][Self-study]	5
Formative Assessment [PRESENCIAL][Assessment tests]	2.5
Unit 1 (de 9):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	1
Unit 2 (de 9):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Study and Exam Preparation [AUTÓNOMA][Self-study]	12

Problem solving and/or case studies [PRESENCIAL][Project/Problem Based Learning (PBL)]	2
Unit 3 (de 9):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	6
Study and Exam Preparation [AUTÓNOMA][Self-study]	20
Problem solving and/or case studies [PRESENCIAL][Project/Problem Based Learning (PBL)]	10
Unit 4 (de 9):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	5
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	2
Problem solving and/or case studies [PRESENCIAL][Project/Problem Based Learning (PBL)]	2
Unit 5 (de 9):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	5
Unit 6 (de 9):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	4.5
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	13
Unit 7 (de 9):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	13
Unit 8 (de 9):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	2
Study and Exam Preparation [AUTÓNOMA][Self-study]	11
Unit 9 (de 9):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Study and Exam Preparation [AUTÓNOMA][Self-study]	8
Problem solving and/or case studies [PRESENCIAL][Project/Problem Based Learning (PBL)]	1
Global activity	
Activities	hours
Problem solving and/or case studies [PRESENCIAL][Project/Problem Based Learning (PBL)]	15
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	13
Class Attendance (theory) [PRESENCIAL][Lectures]	32.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	87
Formative Assessment [PRESENCIAL][Assessment tests]	2.5
Total horas: 150	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
MORRISON AND BOYD	QUIMICA ORGANICA	Pearson		978-9688580431	2001	
Jonathan Weyers	Practical Skills in Biomolecular Sciences	Pearson			2012	
W.T. Godbey	An Introduction to Biotechnology. The Science, Technology and Medical Applications				2015	
NELSON DAVID L./MICHAEL M. COX	Lehninger. Principios de Bioquímica	Omega			2017	
P. VOLLHARDT	QUIMICA ORGANICA	W. H. Freeman and Company New York		978-1-4292-0494-1	2011	