



1. General information

Course: INSTRUMENTAL TECHNIQUES

Type: CORE COURSE

Degree: 402 - UNDERGRADUATE DEGREE PROGRAMME IN BIOTECHNOLOGY

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

Year: 3

Main language: Spanish

Use of additional
languages:

Web site:

Code: 60623

ECTS credits: 6

Academic year: 2023-24

Group(s): 10

Duration: C2

Second language:

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
CE15	Apply instrumental application techniques in Biotechnology.
CG01	Organizational and planning skills.
CG02	Capacity for analysis and synthesis.
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

6. Units / Contents

Unit 1:

Unit 2:

Unit 2.1

Unit 2.2

Unit 2.3

Unit 2.4

Unit 2.5

Unit 3:

Unit 3.1

Unit 3.2

Unit 3.3

Unit 4:
 Unit 4.1
 Unit 4.2
 Unit 4.3
 Unit 4.4
 Unit 4.5
 Unit 5:
 Unit 5.1
 Unit 6:
 Unit 7:

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 CE15 CG01 CG02 CT02 CT03 CT04	1	25	Y	N	
Class Attendance (practical) [ON-SITE]	Practical or hands-on activities	CB01 CB02 CB03 CB04 CB05 CE15 CG01 CG02 CT02 CT03 CT04	0.8	20	Y	Y	
Group tutoring sessions [ON-SITE]	Combination of methods	CB01 CB02 CB03 CB04 CB05 CE15 CG01 CG02 CT01 CT02 CT03 CT04	0.2	5	Y	N	
Formative Assessment [ON-SITE]	Assessment tests	CB01 CB02 CB03 CB04 CB05 CE15 CG01 CG02 CT02 CT03 CT04	0.2	5	Y	Y	
Writing of reports or projects [OFF-SITE]	Reading and Analysis of Reviews and Articles	CB01 CB02 CB03 CB04 CB05 CE15 CG01 CG02 CT02 CT03 CT04	1	25	Y	N	
Study and Exam Preparation [OFF-SITE]	Self-study	CB01 CB02 CB03 CB04 CB05 CE15 CG01 CG02 CT02 CT03 CT04	2.6	65	N	-	
Problem solving and/or case studies [ON-SITE]	Combination of methods	CB01 CB02 CB03 CB04 CB05 CE15 CG01 CG02 CT01 CT02 CT03 CT04	0.2	5	Y	N	
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
Laboratory sessions	20.00%	20.00%	
Oral presentations assessment	10.00%	0.00%	
Test	70.00%	80.00%	
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
Group tutoring sessions [PRESENCIAL][Combination of methods]	5
Writing of reports or projects [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	11
Problem solving and/or case studies [PRESENCIAL][Combination of methods]	5
Unit 1 (de 7):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Unit 2 (de 7):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	6
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	5
Formative Assessment [PRESENCIAL][Assessment tests]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	12

Unit 3 (de 7):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	4
Formative Assessment [PRESENCIAL][Assessment tests]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	12
Unit 4 (de 7):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	6
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	9
Formative Assessment [PRESENCIAL][Assessment tests]	1
Writing of reports or projects [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	14
Study and Exam Preparation [AUTÓNOMA][Self-study]	14
Unit 5 (de 7):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Study and Exam Preparation [AUTÓNOMA][Self-study]	8
Unit 6 (de 7):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Formative Assessment [PRESENCIAL][Assessment tests]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	8
Unit 7 (de 7):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	2
Formative Assessment [PRESENCIAL][Assessment tests]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	9
Global activity	
Activities	hours
Class Attendance (theory) [PRESENCIAL][Lectures]	25
Formative Assessment [PRESENCIAL][Assessment tests]	5
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	20
Writing of reports or projects [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	25
Study and Exam Preparation [AUTÓNOMA][Self-study]	65
Group tutoring sessions [PRESENCIAL][Combination of methods]	5
Problem solving and/or case studies [PRESENCIAL][Combination of methods]	5
Total horas: 150	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Douglas Skoog	Fundamentos de química analítica			978-0-495-55828-6	2017	
Rafael Cela Torrijos, Rosa Antonia Lorenzo Ferreira, M. del Carmen Casais Laiño	Técnicas de separación en Química Analítica	Síntesis		9788497560283	2003	
Ríos Castro, Ángel · Cruz Moreno Bondi, María · Simonet Suau, Bartolomé M.	Técnicas espectroscópicas en química analítica Volumen I. Aspectos básicos y espectrometría molecular	Síntesis		9788499589305	2012	
Ríos Castro, Ángel · Cruz Moreno Bondi, María · Simonet Suau, Bartolomé M.	Técnicas espectroscópicas en química analítica. Volumen II	Síntesis		9788499589312	2012	