



1. General information

Course: FUNDAMENTALS OF MICROBIOLOGY

Type: BASIC

Degree: 341 - UNDERGRADUATE DEGREE PROGRAMME IN BIOCHEMISTRY

Center: 501 - FACULTY OF ENVIRONMENTAL SCIENCES AND BIOCHEMISTRY

Year: 1

Main language: Spanish

Use of additional
languages:

Web site:

Code: 13302

ECTS credits: 6

Academic year: 2023-24

Group(s): 40

Duration: First semester

Second language: English

English Friendly: Y

Bilingual: N

Lecturer: BEATRIZ GARCÍA BÉJAR BERMEJO - Group(s): 40

Building/Office	Department	Phone number	Email	Office hours
	Q. ANALÍTICA Y TGIA. ALIMENTOS		Beatriz.GBermejo@uclm.es	

Lecturer: SUSANA SESEÑA PRIETO - Group(s): 40

Building/Office	Department	Phone number	Email	Office hours
ICAM. Despacho 0.19	Q. ANALÍTICA Y TGIA. ALIMENTOS	5791	Susana.SPrieto@uclm.es	Mondays, Tuesdays and Thursdays from 12 to 14 h. Please check the teacher's availability beforehand by e-mail.

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
E01	Express themselves correctly in basic biological, physical, chemical, mathematical and computer terms.
E02	Work properly and quality driven in a chemical, biological and biochemical laboratory, including safety, handling and disposal of waste and keeping a record of activities.
E09	Be familiar with the different cell types (prokaryotes and eukaryotes) at the level of structure, physiology and biochemistry and be able to critically explain how their properties are adapted to their biological function.
E24	To master the basic microbiological principles and techniques that can be used in the handling, cultivation, observation and identification of microorganisms in the laboratory.
E25	Design, execute and interpret well microbiological and virological diagnostic tests using molecular and serological methods.
G01	To possess and understand the knowledge in the area of Biochemistry and Molecular Biology at a level that, based on advanced textbooks, also includes cutting-edge aspects of relevance in the discipline
G02	To know how to apply the knowledge of Biochemistry and Molecular Biology to professional practice and to possess the necessary intellectual skills and abilities for this practice, including the capacity for: information management, analysis and synthesis, problem solving, organization and planning and generation of new ideas.
G05	Develop those strategies and learning skills necessary to undertake further studies in the area of Biochemistry and Molecular Biology and other related areas with a high degree of autonomy.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Practical recognition of any type of microorganism.

To master the basic microbiological techniques for the handling and study of microorganisms and their application.

To know the methods of culture and measurement of microbial growth.

Know the main groups of microorganisms.

To know the basic principles of Microbiology.

Know the principles of nutrition and bacterial metabolism.

To know in depth the structure of the prokaryotic cell.

To introduce into the knowledge of some cellular types and levels of organization of living beings.

Obtain a comparative overview of prokaryotic and eukaryotic cells, both animal and plant.

To know the physiological and metabolic diversity of microorganisms.

Know the application criteria and protocols for sterilization, disinfection and antisepsis.

Additional outcomes

6. Units / Contents

Unit 1: Introduction to microbiology

Unit 2: Microorganisms as cells
Unit 3: Microscope observation
Unit 4: Cultivation of microorganisms
Unit 5: Comparative study of the structure and function of eukaryotic and prokaryotic cells
Unit 6: Bacterial genetic
Unit 7: Metabolism
Unit 8: Microbial growth
Unit 9: Bacterial systematics
Unit 10: Microbial interesting groups (I)
Unit 11: Microbial interesting groups (II)
Unit 12: Control of microbial growth
Unit 13: Practicum

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	E09 E24 G01 G05	1.32	33	N		All topics will be treated in greater or lesser depth in the theoretical classes. At least one hour per topic will be dedicated in which the teacher will indicate the most important aspects, and, where appropriate, provide additional material, in English or Spanish, so that students can complete the information. The presentations of the master classes will be available to the students on the Moodle virtual platform. Each presentation will indicate the objectives and contents of each topic. The classes will be developed interactively with the students, discussing with them the most difficult or particularly interesting aspects of each topic.
Study and Exam Preparation [OFF-SITE]	Self-study		3.2	80	N	-	
Other off-site activity [OFF-SITE]	Other Methodologies	G01	0.4	10	Y	N	Use of the peer wise tool to review and strengthen the contents
Laboratory practice or sessions [ON-SITE]	Practical or hands-on activities	E02 G02	0.68	17	Y	Y	Each student will carry out 15 hours of practice in the laboratory where they will apply and expand the contents of the theoretical classes. In addition, they will acquire the necessary skills for the correct handling of laboratory material, culture media and chemical reagents, complying with safety regulations and waste disposal. Before carrying out the same, the student must complete a questionnaire reflecting the reading of the script of practices and their understanding. The evaluation of the same will be recoverable, either in the extraordinary call or in the special ending.
Other on-site activities [ON-SITE]	Other Methodologies	E01	0.08	2	Y	N	In the middle of the semester there will be a progress test. It will cover the theory topics that have already been seen in class (approximately 5). Such activity will not be recoverable.
Project or Topic Presentations [ON-SITE]	Group Work	G05	0.2	5	Y	N	Students will make oral presentations on topics proposed by the teacher or chosen by them. The students will be in charge of obtaining the necessary information for their preparation, always counting on the teacher's advice. This work will be done in a group. This activity will not be recoverable.
Final test [ON-SITE]	Assessment tests	E01 E09	0.12	3	Y	Y	A written test of the contents of the theoretical classes will be held on the date determined by the center. This test will be recoverable in the

						extraordinary call or in the special completion.
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
Progress Tests	5.00%	0.00%	In the middle of the semester there will be a progress test. Passing this test does not imply the elimination of the topics included in the final test. This activity is not recoverable.
Oral presentations assessment	10.00%	0.00%	Group work, the participation of the members and their contribution to the proper functioning of the group, oral presentation, clarity, synthesis and correction of the presentations, the bibliography used and the critical and evaluation capacity will be valued. The content of the slides made to carry out the presentation will also be valued. This activity is not recoverable.
Final test	60.00%	75.00%	The theoretical knowledge of the subject, the resolution of questions and the knowledge acquired during the laboratory practices will be taken into account. will be taken into also account: - correct written communication - Capacity for design, analysis and synthesis. A minimum grade of 4 e will be required to be able to add the grade obtained in the rest of the activities. This activity is recoverable.
Practical exam	15.00%	15.00%	On the same day of the final test, a exam will be carried out evaluating the knowledge acquired during the practices. It will be necessary to take a minimum of 4 to be able to pass the subject. This activity is recoverable.
Test	5.00%	0.00%	On the first day of laboratory practices, a brief questionnaire will be made about the contents that will be worked on. This test will take into account the reading and understanding of the practices to be carried out.
Other methods of assessment	5.00%	0.00%	Work with the "peer wise" tool throughout the semester to achieve the established objectives. It is not a recoverable activity.
Total:	100.00%	90.00%	

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).

Evaluation criteria for the final exam:

Continuous assessment:

The modality assigned by default to the student will be the continuous evaluation. Any student may request the change to the non-continuous evaluation modality (before the end of the class period) by sending an email to the professor, provided that 50% of the evaluable activities have not been completed. Attendance at practices is a mandatory and non-recoverable activity to pass the subject. The evaluation of the same will be recoverable, as described in the evaluation criteria, in the extraordinary call and in the final call. The qualifications of the remaining evaluable activities will also be taken into account in the extraordinary call.

To pass the subject it will be necessary to obtain a final grade equal to or greater than 5 (out of 10).

In case of not passing the subject, none of the grades obtained for other academic courses will be kept as long as the student accepts the continuous evaluation.

Non-continuous evaluation:

It will be considered that the students benefit from continuous evaluation, unless they expressly request the teacher to benefit from non-continuous evaluation. Attendance at practices is a mandatory and non-recoverable activity in order to pass the subject. The evaluation of the same if it will be recoverable, both in the extraordinary call and in the final call.

The evaluation criteria of the final test will be the same as for the continuous evaluation, in both parts (theoretical and practical) it will be necessary to have at least a score of 4 points (out of 10) to take into consideration the qualifications of the remaining activities and to pass the subject it will be necessary to obtain a grade equal to or greater than 5 (out of 10). In case of not passing the subject, the qualification of any of the integral parts of the final test will not be kept for other academic courses.

Specifications for the resit/retake exam:

For the retake exam, the grades obtained in the non-recoverable activities carried out during the course will be kept. In the final test it will be necessary to have at least a grade of 4 points (out of 10) in each of the parts (theoretical and practical) laboratory to take into consideration the grades of the remaining activities and to pass the subject it will be necessary to obtain a grade equal to or greater than 5 (out of 10).

In case of not passing the subject, only the qualifications obtained by the oral presentation of topics and the elaboration of the practical report will be kept for other courses.

Specifications for the second resit / retake exam:

To pass this exam, a final test will be carried out (which will include a theoretical part and a practical part) that will mean 100% of the grade, as long as the laboratory practices have been carried out.

9. Assignments, course calendar and important dates

Not related to the syllabus/contents	
Hours	hours

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description
Michael T. Madigan	BROCK Biology of microorganisms	Pearson				