



1. General information

Course: MOLECULAR AND CELLULAR NEUROBIOLOGY
Type: ELECTIVE
Degree: 341 - UNDERGRADUATE DEGREE PROGRAMME IN BIOCHEMISTRY
Center: 501 - FACULTY OF ENVIRONMENTAL SCIENCES AND BIOCHEMISTRY
Year: 4

Main language: Spanish

Use of additional languages:
Web site:

Code: 13332
ECTS credits: 4.5
Academic year: 2023-24
Group(s): 40
Duration: C2
Second language: English
English Friendly: Y
Bilingual: N

Lecturer: OSCAR GOMEZ TORRES - Group(s): 40				
Building/Office	Department	Phone number	Email	Office hours
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2. Pre-Requisites

Not established

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

The cellular and molecular neurobiology is key to understanding the functioning of the nervous system. In this subject, important aspects of brain functioning at the cellular and subcellular level are explained, which will allow understanding their involvement in different

4. Degree competences achieved in this course

Course competences	
Code	Description
E01	Express themselves correctly in basic biological, physical, chemical, mathematical and computer terms.
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.
E26	Design, execute and interpret the results of basic immunochemical techniques.
E30	To know the biochemical and genetic changes of a wide range of pathologies and to know how to explain the molecular mechanisms involved in these changes.
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.
G03	Be able to collect and interpret relevant data, information and results, draw conclusions and issue reasoned reports on relevant social, scientific or ethical issues in connection with advances in Biochemistry and Molecular Biology.
G04	To know how to transmit information, ideas, problems and solutions in the field of Biochemistry and Molecular Biology to a specialized and non-specialized public.
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.
G06	Acquire skills in the handling of computer programs including access to bibliographic, structural or any other type of databases useful in Biochemistry and Molecular Biology.
T10	Ability to self-learn and to obtain and manage bibliographic information, including Internet resources

5. Objectives or Learning Outcomes

Course learning outcomes	
Description	
The professional profile "molecular biomedicine" includes the application of biochemistry in the health sector, so that the student receives a strong biomedical and clinical orientation and also acquires the skills to carry out a professional activity in the field of teaching and research.	
Additional outcomes	

6. Units / Contents

Unit 1: Cells in the nervous system
Unit 2: Nervous system development
Unit 3: Synapsis
Unit 4: Molecular basis of synaptic plasticity
Unit 5: Neuropathology
Unit 6: Techniques in nervous system research
Unit 7: Energy metabolism in the nervous system
Unit 8: Laboratory practices

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	G02	0.8	20	N	-	On the general aspects related to the subject. The master class will be taught in the classroom. The presentations of the master classes will be available to students on the moodle virtual platform.
Study and Exam Preparation [OFF-SITE]	Self-study	E01 E09 E26 E30 G01 G02 G05 T10	2.5	62.5	N	-	
Workshops or seminars [ON-SITE]	Cooperative / Collaborative Learning	E01 E09 E26 E30 G01 G02 G03 G04 G05 G06 T10	0.24	6	Y	N	Analysis of a scientific article or a problem raised related to the subject. The activity will be carried out in a group way. The group should present and discuss the scientific article or problem analyzed orally. This activity is not recoverable.
Progress test [ON-SITE]	Assessment tests	E01 E09 E26 E30 G01 G02 G03 G04 G05 G06	0.08	2	Y	N	Analysis of a scientific article or a problem raised related to the subject. The activity will be carried out in a group way. The group should present and discuss the scientific article or problem analyzed orally. This activity is not recoverable.
Final test [ON-SITE]	Assessment tests	E01 E09 E26 E30	0.08	2	Y	Y	It will include questions about the theory taught in the theoretical classes. To count the grades of practices, seminars and progress tests it will be essential to obtain a minimum score of 4 (out of 10) in the final test
Laboratory practice or sessions [ON-SITE]	Practical or hands-on activities	E26	0.6	15	Y	Y	It will be evaluated by means of a written test and it will be an essential requirement to pass the subject, obtaining a minimum qualification of 4 in the practical exam. In case of not obtaining at least a 4, the student can be examined again in the extraordinary call. Attendance at practices is considered as a compulsory and non-recoverable activity to be able to pass the subject. The evaluation of the same will be recoverable, either in the extraordinary or special call for completion.
Analysis of articles and reviews [OFF-SITE]			0.2	5	N	-	
Total:			4.5	112.5			
Total credits of in-class work: 1.8			Total class time hours: 45				
Total credits of out of class work: 2.7			Total hours of out of class work: 67.5				

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
Final test	70.00%	90.00%	Final written test to assess the knowledge acquired throughout the course. The student will be able to re-examine in the extraordinary call in case of not obtaining a 4, which is mandatory to consider the other grades.
Theoretical papers assessment	10.00%	0.00%	Participation, expository capacity, organization and clarity in the presentation, capacity for synthesis and analysis of the problem raised will be evaluated. This activity is not recoverable.
Progress Tests	10.00%	0.00%	Progress tests or tests will be carried out throughout the course. This activity is not recoverable.
Laboratory sessions	10.00%	10.00%	It will be evaluated by written test. It will be necessary to obtain a minimum grade of 4 to be able to consider the rest of the notes. The student will be able to re-examine in the extraordinary announcement in case of not obtaining a 4 in the examination of practices. The realization of the practices is mandatory and not recoverable.
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).

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 modality of non-continuous evaluation (before the end of the class period) by emailing the teacher, provided that he has not completed 50% of the evaluable activities. To be able to pass the subject it will be necessary to obtain a minimum qualification of 5 out of 10. To take the exam it will be essential that the practices have been carried out. The final grade of the subject will be calculated taking into account the percentages of the previous table, being an indispensable requirement for the qualifications obtained in the tests of progress and theoretical works to be counted to obtain a minimum score of 4 in the final test of theory and a 4 in the test of practices, in both cases on 10.

Non-continuous evaluation:

To be able to pass the subject it will be necessary to obtain a minimum qualification of 5 out of 10. To take the exam it will be essential that the practices have been carried out. The final grade of the subject will be calculated taking into account the percentages of the previous table, being indispensable requirement to obtain a minimum qualification of 4 in the final test of theory and a 4 in the test of practices, in both cases on 10.

Specifications for the resit/retake exam:

For the extraordinary call will be taken into account the different qualifications of the activities carried out throughout the course in the same way as in the ordinary call. To take the exam it will be essential that the practices have been carried out. It is an essential requirement for the scores obtained in the progress tests and theoretical works to be counted to obtain a minimum score of 4 in the final theory test and a 4 in the practice test, in both cases out of 10.

Specifications for the second resit / retake exam:

To pass this call there will only be a final test that will include concepts and learning developed both in the theory and practice classes, and that will represent 100% of the grade. To take the exam it will be essential that the practices have been carried out. A minimum score of 4 in the final theory test and a 4 in the practice test, in both cases out of 10, is an essential requirement.

9. Assignments, course calendar and important dates

Not related to the syllabus/contents

Hours	hours
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10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description
Bryne, Heiderberg, Waxham	From molecules to networks	Elsevier		9780123741325	2009	En agosto nueva version. ISBN: 9780123971791
Dale Purves, George J. Augustine, David Fitzpatrick, William C. Hall, Anthony-Samuel LaMantia, James O. McNamara, and S. Mark Williams.	Neurociencia	Medica Panamericana		9788479039899	2007	
Dane Saves, Thomas Reh, William Harris	Development of the Nervous System	Elsevier		9780123745392	2011	
Daniel P. Cardinali	Neurociencia aplicada: sus fundamentos	Medica Panamericana		9500604612, 97895006	2007	
Kandel, Schwartz y Jessell	"Principles of Neural Science" 5th	Mc Graw Hill eds.		ISBN-10: 0071390111	2012	
Puelles López, Martínez Pérez, Martínez de la Torre	Neuroanatomia	Medica Panamericana		978-8479034535	2008	
Scott T. Brady, George J. Siegel, Robert Wayne Albers, Donald Lowell Price	Basic Neurochemistry. Principles of molecular, cellular and medical Neurobiology	Academic Press		9780123749475	2012	