SUBJECT TEACHING GUIDE

G4 - Metabolic and Structural Biochemistry

Degree in Medicine

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Degree in Medicine			Type and Year	Core. Year 1
Faculty	Faculty of Medicine				
Discipline	Basic Subject Area: Biochemistry Morphology, Structure and Function of the Human Body				
Course unit title and code	G4 - Metabolic and Structural Biochemistry				
Number of ECTS credits allocated	6	Term		Semester based (1)	
Knowledge Field					
Web	http://aulavirtual.unican.es				
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. BIOLOGIA MOLECULAR
Name of lecturer	MARIA DOLORES DELGADO VILLAR
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Other lecturers	JOSE CARLOS RODRIGUEZ REY JOSE PEDRO VAQUE DIEZ ALFONSO BOLADO CARRANCIO ALBERTO SANCHEZ DIAZ MAGDALENA MARIA FOLTMAN FLOR MARIA PEREZ CAMPO

4. OBJECTIVES

Most diseases are the consequence of molecular changes and in order to understand the basis of pathological processes it is important to have a solid knowledge of Biochemistry. The major aim of this course on Biochemistry is to provide the medical student with the basical knowledge to understand the molecular logic of health and disease.
Biochemistry has an experimental nature and thus laboratory lessons are an important part of the course.
The specific objectives of the course are:
- To distinguish the chemical, physical, and structural properties of water, as well as its role as a solvent and its influence on the structure of biological molecules.
- To identify the structure, physical properties, chemical properties, and biological functions of biomolecules.
- To learn the functions of enzymes, understand their classification, and recognize their nomenclature. To comprehend their kinetics and the mode of action of factors that affect their activity.
- To identify the principles of energy production in cells, as well as the mechanisms that regulate the synthesis and degradation of biomolecules.
- To know the main metabolic pathways, their interconnections, and their physiological significance, and to distinguish the mechanisms that regulate their activity to meet physiological demands.
- To integrate the molecular and metabolic bases of the functioning of the human organism in relation to human pathology.

6. SUBJECT PROGRAM

CONTENTS	
1	Biomolecules, carbohidrates, lipids, membranes, aminoacids, proteins, enzymes.
2	Metabolism. Major pathways and regulation.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
The practical test will include questions of laboratory lessons.	Written exam	No	Yes	10,00
The first test corresponds to topics 1 to 10 of the theoretical program.	Written exam	No	Yes	40,00
The second test corresponds to topics 11 to 20 of the theoretical program	Written exam	No	Yes	40,00
Personal work will account for one tenth of total score.	Work	No	No	10,00
TOTAL				100,00

Observations

The final grade (maximum 10 points) will be obtained by adding the scores from the theory exams (up to 8 points), practical test (1 point), and Personal work proposed by the professors (1 point). To pass the course, the sum of the theory exams, practicals, and personal work must be equal to or greater than five points.
Two partial theory exams will be conducted, consisting of multiple-choice questions and short questions or exercises related to the program's content.
The first partial exam (on the date indicated in the calendar) will include questions related to topics 1 to 10 of the theoretical program. The total value of this exam will be 4.0 points. A total score of 2 or more points is required to pass this partial exam. A score of 1.5 or more points can be compensated with the score from the second partial exam. Students who score less than 1.5 on this partial exam must retake it in the extraordinary exam, even if their total score exceeds five points.
The second partial exam (on the date indicated in the calendar) will include questions related to topics 11 to 20 of the theoretical program. The value of this exam will be 4.0 points. A total score of 2 or more points is required to pass this partial exam. A score of 1.5 or more points can be compensated with the score from the first partial exam. Students who score less than 1.5 on this partial exam must retake it in the extraordinary exam in February, even if their total score exceeds five points.
Practicals: There will be a practical test at the end of the practical sessions, with a total value of 1 point.
Personal work: One assignment related to Structural Biochemistry (0.4 points) and another related to Metabolic Biochemistry (0.6 points) will be conducted.
EXTRAORDINARY EXAM
An extraordinary exam will be held for students who have not passed the course in the regular exam session. Some students will take only one partial exam (as indicated above), while others will take the complete course exam.

Observations for part-time students

The same as full-time

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

- Lehninger. “Principios de Bioquímica”, 7ª ed. Nelson y Cox. Ed. Omega. 2018.
- Marks Bioquímica médica básica: un enfoque clínico. 5ª ed. Lieberman M. Marks A.D. Peet. A. Wolters Kluwer. 2018.