

32302 - Medical Biochemistry I

Syllabus Information

Academic year: 2024/25

Subject: 32302 - Medical Biochemistry I

Faculty / School: 104 - Facultad de Medicina

229 - Facultad de Ciencias de la Salud y del Deporte

Degree: 649 - Degree in Medicine

650 - Degree in Medicine

ECTS: 6.0

Year: 1

Semester: First semester

Subject type: Basic Education

Module:

1. General information

This subject, in conjunction with Medical Biochemistry II, provides information on the molecular basis of genetic inheritance, the structure and metabolism of biomolecules, the ways in which cells and organisms get and use energy, and the regulation of these processes.

This knowledge allows us to understand human physiological processes, their alterations, and the mechanisms of action of many therapies.

These strategies are aligned with the Sustainable Development Goals of the United Nations 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>), and the knowledge and skills outcomes acquired through this subject contribute to a certain extent to their achievement: Objectives 3: Health and well-being, 4: Quality education; and 5: Gender equality.

2. Learning results

The student, to pass this subject, must demonstrate the following results...

1. Is capable of identifying and understanding the structure of biomolecules, the metabolic reactions of transformation and synthesis of said biomolecules, as well as the regulatory mechanisms.
2. Has learned the processes for obtaining energy from metabolism.
3. Is capable of working in a biochemical laboratory and performing the most basic biochemical techniques.
4. Is able to use biomedical sources of information: Ability to search for bibliography in PubMed (<https://pubmed.ncbi.nlm.nih.gov/>) to carry out a topic. Sufficient knowledge of English to be able to understand the scientific terminology of an international biomedical journal.
5. Begins to apply biochemical knowledge to the solution of medical problems. Distinguishes normal biochemical values from their pathological variations.

3. Syllabus

1.-Amino acids and proteins

Structure and conformation of proteins.

Enzymes and coenzymes (vitamins).

2.-Intermediate metabolism

General concepts about metabolism and bioenergetics

3.-Carbohydrate metabolism

Glycolysis. Citric acid cycle. Biological oxidation and respiratory chain. Gluconeogenesis. Glycogen metabolism and

its regulation. Pentose phosphate pathway. Metabolism of heterosides.

4.-Lipid metabolism

Metabolism of triglycerides, complex lipids, and cholesterol. Cholesterol derivatives of biomedical significance. Metabolic integration.

5.-Metabolism of nitrogenous compounds

Metabolism of amino acids and their precursor functions (amines, nitrogenous bases, and the heme group).

4. Academic activities

1-Lectures. Theoretical content is presented during participatory sessions.

2-Seminars and resolution of clinical cases. Interactive sessions with the expansion of theoretical content and application to the resolution of real-life situations.

3-Laboratory practices. Acquisition of skills by performing simple laboratory techniques.

The student will be informed of the risks that may arise from carrying out these activities and the procedures in the event of an accident, signing the commitment to comply with work and safety regulations (<http://uprl.unizar.es/estudiantes.html>)

The materials used on the subject will be published in the ADD.

Attendance and completion of activities 2 and 3 are mandatory.

The time dedicated to this subject is completed with tutorials, evaluations, and the autonomous work of the student.

5. Assessment system

1) Theoretical knowledge. They represent 80% of the final grade. They will be evaluated through multiple choice tests. The chance factor will be discounted, but not the failed answers. They will be approved with a grade of 5 out of 10.

- Midterm evaluation: in the middle of the semester, the possibility of eliminating a subject will be offered by passing a 40 question test on the contents covered to date. Students who pass it must take the rest of the subject in the final exam sessions, using a 40-question test. In this modality, the grade for this section will result from the average of the two midterms.

- Final exam (January and June calls): a test of 60 questions on the entire program (distributed according to the length of each block).

2) Practical knowledge and skills: They represent 20% of the final grade. Students must pass tests for each activity (laboratory, case resolution) as a continuous evaluation for in-person activities. On the day of the final exam, students who fail the continuous evaluation will be subjected to a global exam.

The theoretical part must be passed to take into account the grades obtained in the practical section.

6. Sustainable Development Goals

3 - Good Health & Well-Being

4 - Quality Education

5 - Gender Equality