

26703 - Human biochemistry

Syllabus Information

Academic year: 2024/25

Subject: 26703 - Human biochemistry

Faculty / School: 104 - Facultad de Medicina

229 - Facultad de Ciencias de la Salud y del Deporte

Degree: 304 - Degree in Medicine

305 - Degree in Medicine

ECTS: 6.0

Year: 1

Semester: First semester

Subject type: Basic Education

Module:

1. General information

This subject provides knowledge of the structure and metabolism of biomolecules, the obtaining and utilization of energy, and the molecular basis of heredity and regulatory mechanisms.

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

These approaches are aligned with the Sustainable Development Goals of the United Nations 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>), their learning results provide training and competence to contribute to some extent to their achievement: Goal 3: Health and wellness, 4: Quality education and 5: Gender equality.

2. Learning results

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

1. Is able to identify and know the structure of biomolecules, the metabolic reactions of transformation and synthesis of these biomolecules, as well as the regulation mechanisms.
2. Knows the mechanisms of obtaining metabolic energy.
3. Describe the molecular basis of genetic inheritance.
4. Is able to manage in a biochemical laboratory and to perform the most basic biochemical techniques.
5. Is able to use biomedical information sources: Ability to search bibliography in PubMed (<https://pubmed.ncbi.nlm.nih.gov/>) to write on a topic. Sufficient knowledge of English to be able to understand the scientific terminology of an international biomedical journal.
6. Initiate the knowledge of the medical applications of Biochemistry: Differentiate normal biochemical values from their pathological variations.

3. Syllabus

I-Amino acids and proteins

Structure and conformation of proteins. Enzymes and vitamins.

II-Storage and use of genetic information

DNA replication and transcription. Protein biosynthesis. Mitochondrial genome.

III-Intermediate metabolism

IV-Carbohydrate Metabolism

Glycolysis. Citric acid cycle. Biological oxidation and respiratory chain. Gluconeogenesis. Glycogen metabolism and its regulation. Pentose phosphate pathway. Metabolism of heterosides.

V-Lipid Metabolism

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

VI-Metabolism of nitrogen compounds

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

4. Academic activities

This subject belongs to an extinct curriculum and hence has not academic activities assigned.

The student will be able to agree tutoring with the teachers to develop a study plan and address specific doubts.

5. Assessment system

1) Theoretical knowledge. They **represent 80% of the final score**. The exam will consist of a test of 60 multiple-answer questions on the entire syllabus. The random factor will be discounted but not the failed answers. It will be passed with a score of 5 out of 10.

2) Knowledge and practical skills. They represent **20% of the final score**. The score obtained in the last call shall apply. If it is absent or less than 5, they will be evaluated on the day of the final exam by means of a short-answer test on the contents dealt with in the practices. It will be passed with a score of 5 out of 10.

The theoretical part must be passed to take into account the grades obtained in paragraph 2.