

29239 - Structural Biochemistry

Información del Plan Docente

Academic Year	2018/19
Subject	29239 - Structural Biochemistry
Faculty / School	229 - Facultad de Ciencias de la Salud y del Deporte
Degree	441 - Degree in Human Nutrition and Dietetics
ECTS	7.0
Year	1
Semester	First semester
Subject Type	Basic Education

Module

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The learning process designed for this subject is based on the following:

This is a core subject and aims for students to assimilate and appropriately use biochemical and molecular concepts on which, ultimately, the understanding of physiological (including nutritional) processes rest. To achieve these goals the course covers a series of activities which include: i) lectures, ii) practice sessions and problem-solving sessions.

4.2.Learning tasks

1. Lectures program (50 hours onsite).

29239 - Structural Biochemistry

2. Laboratory practice sessions (17.5 hours onsite).

3. Problem-solving sessions (4 hours onsite).

4.3.Syllabus

LECTURES (50hr)

SECTION I. PHYSICOCHEMICAL BASIS OF BIOLOGICAL PROCESSES.

1. Life: A chemical function. 2. Chemical bonding and molecular structure. 3. Water: structure and physicochemical properties. 4. Weak interactions in aqueous media. 5. Organic compounds. 6. Chemical reactions in living organisms. 7. Bioenergetics.

SECTION II. COMPOSITION, STRUCTURE AND FUNCTIONS OF MACRONUTRIENTS.

8. Amino acids, peptides and proteins. 9. Protein structure. 10. Protein function and nutritional importance of proteins. 11. Carbohydrates: structure, function and nutritional importance. 12. Carbohydrates: Fiber. 13. Lipids: structure, function and nutritional importance. 14. Nucleotides and nucleic acids: structure and function.

SECTION III. REGULATORY NUTRIENTS.

15.- Functions and mechanisms of action of water-soluble vitamins. 16. Functions and mechanisms of action of fat soluble vitamins. 17. Macrominerals. 18. Microminerals. 19. Trace elements.

LABORATORY SESSIONS

P1. Introduction to laboratory work. Preparation of solutions.

P2. Rating solutions.

P3. Use and operation with a pH meter. Titration curve of an amino acid.

P4. Electrophoresis of serum proteins.

P5. Starch hydrolysis and determination of reducing sugars.

P6. Quantitative determination of cholesterol.

P7. Extraction and separation of plant pigments.

PROBLEM SOLVING SEMINARS (4hr).

29239 - Structural Biochemistry

PSS1 (2hr)

PSS2 (2hr)

4.4.Course planning and calendar

This subject covers 19 theoretical chapters, 7 practice sessions and 2 problem-solving sessions (in small groups). There will be 4 lectures sessions per week (lasting 1 hour) and 4 sessions per week of practices and/or problem-solving seminars. On average students will attend one of these practical sessions every week and a half (consult official timetables).

4.5.Bibliography and recommended resources