

27132 - Biochemistry of Nutrition

Syllabus Information

Academic year: 2024/25

Subject: 27132 - Biochemistry of Nutrition

Faculty / School: 100 - Facultad de Ciencias

Degree: 446 - Degree in Biotechnology

ECTS: 6.0

Year: 4

Semester: Second semester

Subject type: Optional

Module:

1. General information

The overall objective is to provide the student with fundamental knowledge about nutrients, energy requirements, nutritional genomics, the microbiome and its relationship to the chronic diseases that comprise the metabolic syndrome. In addition to a practical approach to Nutri-medicine, it delves into the nutrient-disease relationship.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 : (<https://www.un.org/sustainabledevelopment/es/>) The acquisition of the learning results will provide the training and competence to contribute to their achievement. Specifically SDG 3: Health and wellness, 5. Gender Equality and 12. Responsible Production and Consumption

It is essential to have taken the General Biochemistry subject and it is highly recommended to have taken the following subjects : Genetics, Immunology and Physiology .

2. Learning results

- To review and deepen the knowledge of the mechanisms by which nutrients and non-nutrients are involved in various physiological or pathological situations, their relationship with the microbiota, as well as the role of genetic polymorphisms.
- To use the appropriate methodology to calculate an individual's energy balance and nutritional status.
- To identify and solve nutritional problems related to the knowledge of the subject by applying the sources and materials indicated above.
- To judge objectively the information on the beneficial or detrimental health effects of nutrients and non-nutrients published both in scientific journals and in the press
- To prepare and publicly present topics related to the knowledge of the subject. This section involves working in teams as well as synthesizing, integrating and critically analysing the information obtained.

3. Syllabus

Topic 1. Basic concepts. Metabolic syndrome

Topic 2. Body composition. Calorimetry. Energy balance.

Topic 3. Pathological aspects of carbohydrates. Sweeteners.

Topic 4. Microbiome. Pre- and pro-biotics.

Topic 5. Role of dietary lipids in cardiovascular disease. Effects of autacoids. Phytosterols.

Topic 6. Mediterranean Diet. Functional foods.

Topic 7. Nutritional genomics. Nutrigenetics. Nutrigenomics.

Topic 8. Quality and protein requirements. Nitrogen balance.

Topic 9. Obesity assessment. Regulation of intake and expenditure

Topic 10. Metabolic adaptation to exercise. Dietary factors and physical activity

Topic 11. Vitamins and minerals

4. Academic activities

Master classes: 30 hours

Sessions with the teacher in which the contents of the subject will be explained

Problems and cases: 4 hours

Calculations and modification of the energy balance

Seminars: 8 hours. Taught by experts

Laboratory practices: 12 hours

Nutrient analysis and quantification

Report on nutritional status: 12 hours.

Energy balance and its adequacy with nutritional recommendations.

Assignments: 6 hours

Elaboration of a topic (bibliographic research, analysis, summary, scientific rigor, coherence of expression) and oral defence.

Maximum 15 minutes of presentation and 5 minutes of discussion.

Personal study: 72 hours

Assessment tests. 2 hours

5. Assessment system

The subject will be evaluated as follows:

Test 1. Individual written test consisting of twenty multiple-choice questions, one problem and two short essay questions . (70% of the grade, minimum 4 out of 10).

The assessment criteria are: mastery of the contents, use of terminology, accuracy of concepts, justification of arguments

Test 2. Execution of the nutritional study. (10% of the grade)

The assessment criteria are: use of terminology, application of the concepts of the energy balance process, justification of arguments.

Test 3. Presentation and discussion of a scientific topic (15% of the grade)

The assessment criteria are: use of terminology, structuring and follow-up of the topic, bibliography used, time limit.

Test 4. Performance and report of the results obtained in the practices. (5% of the grade)

The assessment criteria are: structuring, discussion and justification of arguments.

In addition to the assessment system indicated in the previous items, the student will have the possibility of being assessed by a global test, which will judge the achievement of the learning results indicated above.

6. Sustainable Development Goals

3 - Good Health & Well-Being

5 - Gender Equality

12 - Responsible Production and Consumption