Universitat Autònoma de Barcelona

2020/2021

Nutrition and Dietetics

Code: 101881
ECTS Credits: 6

Degree	Type	Year	Semester
2501230 Biomedical Sciences	OT	4	0

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

Contact

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: No
Some groups entirely in Spanish: No

Teachers

Enrique Domingo Ribas
Vicente Martínez Perea
Ismael Capel Flores
Raquel Moral Cabrera

Prerequisites

It is very recommended the student has acquired sufficient knowledge and competences about biochemistry, physiology and pathophysiology.

Objectives and Contextualisation

The "Nutrition and Dietetics" is an optional subject that is programmed during the second semester of the fourth year of the Bachelor's Degree in Biomedical Sciences. It develops the basic contents of human nutrition, nutrition in special physiological situations, nutrition in the field of public health, as well as some of the main interactions between nutrition, health and pathology. It also develops nutritional guidelines for the development of diets in the context of healthy eating.
The general objective of the subject consists in the acquisition of knowledge, skills and attitudes in the different fields of nutrition and dietetics.

Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Display knowledge of the concepts and language of biomedical sciences in order to follow biomedical literature correctly.
- Display theoretical and practical knowledge of the major molecular and cellular bases of human and animal pathologies.

- Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
- Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
- Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
- Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
- Work as part of a group with members of other professions, understanding their viewpoint and establishing a constructive collaboration.

Learning Outcomes

1. Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
2. Correctly use the terminology of medicine and its text and reference books
3. Identify the principal pathologies that become more prevalent with ageing.
4. Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
5. Metabolic diseases. Describe the etiopathogenia, the physiopathology and the basic characteristics of the principal syndromes and diseases of metabolism and the nutritional state, including diabetes.
6. Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
7. Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
8. Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
9. Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
10. Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
11. Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
12. Understand the molecular and cellular bases of cancer, the causes of its development and the bases for its treatment.
13. Work as part of a group with members of other professions, understanding their viewpoint and establishing a constructive collaboration.

Content

1. Physiological and metabolic bases of nutrition

1.1. The digestive process

1.2. The intermediate metabolism

1.3. Regulation of food intake

2. Nutrients: concepts and classification

2.1. Water

2.2. Carbohydrates

2.3. Lipids

2.4. Proteins

2.5. Vitamins

2.6. Minerals

2.7. Conditionally essential nutrients

3. Energy.

3.1. Components of energy expenditure

3.2. Factors that influence energy expenditure

3.3. Estimation of energy needs

3.4. Energy obtained from food

4. Recommended nutrients and energy intakes

4.1. Dietary Reference Intakes (IDR) and other basic concepts

4.2. Nutritional goals vs. IDR

5. Foods.

5.1. Components: nature, classification and functions

5.2. Nutritional classification of foods

5.3. Plastic foods

5.4. Energetic foods

5.5. Mainly energetic foods

5.6. Regulatory foods

5.7. Complementary foods

6. Food guidance and food composition tables (TCAs)

6.1. Food guides: concept, utility and type

6.2. Ration concept

6.2. TCA: features and use

7. Balanced feeding: Guidelines for the preparation of diets

7.1. Characteristics of healthy eating

7.2. Dietary council

7.3. Vegetarianism and alternative diets

7.4. Therapeutic diets

8. New trends in human nutrition

8.1. Genetically modified foods

8.2. Functional foods

8.3. Nutrition statements and healthy properties of food

8.4. Dietary supplements

9. Nutrition in special physiological situations

9.1. Gestation and lactation

9.2. Early childhood, second childhood and adolescence

9.3. Advanced age

9.4. Physical activity and sport

10. Nutrition and Public Health

10.1. Evaluation of nutritional status

10.2. Nutritional Epidemiology

10.3. Food surveys

10.4. Dietary intervention

10.5. Food and culture

11. Nutrition and health: Interactions

11.1. Food and cancer

11.2. Cardiovascular diseases

11.3. Alcoholic beverages

11.4. Eating disorders

11.5. Diet and obesity

11.6. Diabetes mellitus and metabolic syndrome

11.7. Anemia: iron deficiency, vitamin B12 deficiency and folate deficiency

11.8. Nutrition and immunity

11.9. Allergies and food intolerances

12. Interactions between nutrients and drugs

13. Introduction to nutrigenomics, nutrigenetics and nutriepigenetics

Methodology

- Theory classes:

Systematic explanation of the subject topics, giving relevance to the most important concepts. The student acquires the basic scientific knowledge of the subject in theory classes, which will be complemented by self-study of the themes of the subject program.

- Laboratory practices:

Practical sessions for the observation and performance of procedures, the practical learning of physiological techniques and their medical application. Group work and active self-learning are promoted.

- Case-based learning:

Presentation, discussion and exposition of cases and problems of relevance for learning the subject. The knowledge acquired in theory classes, practices and personal study is applied to the resolution of practical cases about real situations and scenarios.

- Supervised teaching:

Availability of supervised teaching for helping in the autonomous study of human nutrition concepts and their application for the resolution of cases.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Case resolution work (PAUL)	8	0.32	12, 3, 5, 13, 2
Laboratory Practices (PLAB)	3	0.12	13, 2
Theory (TE)	34	1.36	12, 3, 5, 2
Type: Supervised			
Support tutorials for the understanding of the subject and development of the learning objectives.	15	0.6	12, 3, 5, 2
Type: Autonomous			
Personal study, preparation of schemes, conceptual maps and summaries. Preparation of case-based work and practices.	83	3.32	12, 3, 5, 2

Assessment

The acquisition of the competences of the subject will be evaluated by:

- Continuous evaluation:

Throughout the course, the continuous evaluation will consist of:

1) Written evaluations through objective tests developed in scheduled exam sessions (partial exams). They evaluate the comprehension and knowledge of the concepts developed in the different sections of the syllabus and that the student must have acquired both in the theoretical and practical classes, as well as in their own self-learning (75% of the overall final grade).

The exams will contain multiple choice questions and / or short written questions.

Two of these partial exams will be done:

- Block 1: corresponding to the basic aspects of nutrition. Its mark will be 40% of the overall grade in this section.

- Block 2: corresponding to nutrition in special situations, and nutrition and health. It includes the second part of the syllabus (from topic 9). Its mark will be 60% of the overall grade in this section.

In order to pass the subject it is necessary to obtain a minimum of 5.0 in each of these blocks as well as in the average grade between them.

2) Written evaluations through objective tests developed during the laboratory and the case-based study practices (25% of the overall final grade).

The tests will consist of multiple choice questions and / or short written questions and / or presentation of works and results.

In order to pass the subject it is necessary to obtain a minimum of 5.0 in the final grade (75% written tests (1) + 25% cases-based study and practices (2)).

- Final recovery exam:

A final examination for recovery will be carried out, in which the student will have to attend only if he has not passed the continuous evaluation of the same academic year. This final exam will also be done in two blocks, with the same percentages for each block above mentioned (40% and 60%). This exam will have questions about theory and practices. Its mark will be the 100% of the final grade.

To pass the subject through the final exam, it is necessary to obtain a minimum of 5.0 in the final grade.

According to the general regulations of the UAB, to participate in the final examination, the student must have been previously evaluated in a set of activities whose weight equals to a minimum of two thirds of the total qualification of the subject.

It will be considered as "not asseassable" the student who does not take the scheduled exam sessions.

For each one of the exams of the subject a period of reviewing will be established properly publicity.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Written evaluation through objective tests: multiple choice questions	75%	4	0.16	11, 12, 3, 4, 5, 10, 9, 6, 7, 2
Written evaluation through objective tests: multiple choice questions and / or restricted questions essay tests and / or presentation of works and results	25%	3	0.12	1, 11, 12, 3, 4, 5, 10, 9, 8, 6, 7, 13, 2

Bibliography

Specific bibliography:

- Biesalski HK, Grimm P, Nowitzki-Grimm S. Nutrición. Texto y Atlas de Nutrición, 6ª ed. Elsevier, 2016.

- Escott-Stump S. Nutrición, diagnóstico y tratamiento, 8ª ed. Lippincott Williams and Wilkins. Wolters Kluwer Health, 2016.

- Gil A. Tratado de Nutrición, 3ª ed. Editorial Médica Panamericana, 2017.

- Mahan LK, Raymond JL. Krauses's Food and the Nutrition Care Process. 14 ed. Elsevier, 2017.

- Martínez Hernández J.A.; Puy Portillo Baquedano M. de (dirs.). Fundamentos de nutrición y dietética: bases metodológicas y aplicaciones. Editorial Médica Panamericana, 2011. ISBN 978-84-9835-640-3 [Recurs electrònic] URL:

http://www.medicapanamericana.com.are.uab.cat/VisorEbookV2/Ebook/9788498356403

- Mataix J. Nutrición y Alimentación Humana, 2ª ed. Ergón 2009.

- Organización Médica Colegial de España y Ministerio de Sanidad y Consumo. Guía de Buena Práctica Clínica en el Consejo Dietético. Editorial International Marketing & Communication, SA. Madrid, 2005.

- Salas-Salvadó J. Nutrición y Dietética Clínica, 3ª ed. Elsevier, 2014.

General bibliography:

- Hall JE. Guyton y Hall. Tratado de Fisiología Médica, 13ª ed. Elsevier, 2016.

- Tresguerres JAF. Fisiología Humana, 4ª ed. MCGraw Hill-Interamericana, 2010.

Internet resources:

- Agencia Española de Seguridad Alimentaria y Nutrición: http://www.aesan.msc.es/

- Comisión Europea: Agricultura, pesca y alimentación: http://ec.europa.eu/news/agriculture/index_es.htm

- Organización Mundial de la Salud: http://www.who.int/es/

- EUFIC - The European Food Information Council: https://www.eufic.org/en

- EFSA - European Food Safety Agency: http://www.efsa.europa.eu/

- Sociedad Española de Nutrición Comunitaria (SENC): https://www.nutricioncomunitaria.org/es/