

Degree programme	Type	Course
Medicine	OB	2

Contact lecturer

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Group languages

You can consult this information at the [end](#) of the document.

Prerequisites

Although no official requirements are defined for this subject, it is necessary to have completed and achieved the basic knowledge in Biochemistry and Molecular Biology, Cell Biology and General Physiology, subjects of the first course.

It is also advisable and highly recommended that the student have acquired sufficient knowledge about Medical Physiology I, a subject of the first semester of the second year, particularly about the physiology of the digestive system.

It is also highly advisable for the student to integrate the knowledge acquired in this subject with those of others of the same course that have related contents: Medical Physiology II, Human Genetics and Medical Psychology.

Objectives

The "Human Nutrition" is a compulsory subject that is programmed in the second year of the Bachelor 's Degree in Medicine. It has a total of 3 ECTS credits and is taught by the Medical Physiology Unit of the Department of Cell Biology, Physiology, and Immunology. In this subject the basic contents of nutrition and nutrition in special physiological situations are developed. Students are also introduced to the nutritional aspects of various prevalent diseases, as well as to the assessment of nutritional status from the point of view of public health. TThe training in Clinical and Hospital Nutrition will be carried out later, mainly within the "Clinical Practice of Systems" subject, once the students have achieved the knowledge of the diseases that will be tributary of nutritional support and application of dietary principles and recommendations for the recovery and rehabilitation of the patient. Both blocks, basic and clinical, are closely related and the teaching programs are coordinated to achieve the teaching objectives.

The general objective of the subject of "Human Nutrition" is the acquisition of knowledge, practical skills and attitudes in the different areas of nutrition and, specifically, the basic aspects, nutrition in special situations and the potentiality of food for promoting health, improving well-being and reducing the risk of disease. The knowledge acquired in this subject is essential for all medical specialties. Nutritional imbalances, especially malnutrition and obesity, are serious public health problems, being real epidemics of the 21st century. This subject belongs to an area of knowledge that has a fundamental and highly relevant content in the training of future medical professionals.

Learning outcomes

1. Identify and describe the basic features of human nutrition.
2. Analyse the characteristics of a diet that meets individual and community needs.
3. Evaluate the nutritional state.
4. Analyse the potential of foods to promote health, improve well-being and reduce the risk of illness.
5. Identify the role of diet as part of a healthy lifestyle.
6. Develop education on healthy nutrition and know the basics of dietary planning.
7. Identify the cultural and social aspects of food intake.
8. Recognise healthy lifestyles, in particular those related to nutrition.
9. Describe the methodologies for assessing dietary habits and the nutritional state of a population.
10. Analyse the impact on health of new trends in human food intake.
11. Identify the basic concepts in the area of foods, food intake, diet, nutrition and nutrients.
12. Analyse body composition.
13. Explain energy metabolism.
14. Describe nutritional needs in infancy, childhood and adolescence.
15. Describe nutritional needs in pregnancy and breastfeeding.
16. Describe nutritional needs in adulthood and old age.
17. Describe nutritional needs in physical exercise and sport.
18. Identify the processes of digestion, transport and excretion of nutrients.
19. Describe nutrients and their metabolism.
20. Describe the function of water, electrolytes and acid-base balance.
21. Explain the physiological mechanisms involved in the regulation of ingestion and energy expenditure.
22. Apply the concepts of nutrigenetics and nutrigenomics.
23. Identify imbalances in body weight and nutritional states.
24. Describe the illnesses related to nutritional imbalances.
25. Describe the alterations to physiological mechanisms that occur in eating disorders.
26. Explain the nutritional imbalances that result from eating disorders.
27. Formulate surveys on diet to assess dietary habits and the nutritional state.
28. Convey knowledge and techniques to professionals working in other fields.
29. Be able to work in an international context.
30. Demonstrate, in professional activity, a perspective that is critical, creative and research-oriented.
31. Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
32. Demonstrate basic research skills.
33. Use information and communication technologies in professional practice.

Contents

A. BASIC ASPECTS

1. Basic concepts: nutrition, feeding, nutrients, diet.
2. Energy and nutrient intake requirements and recommendations.
3. Energy metabolism.
4. The nutrients and their metabolism.
 - 4.1. Water.
 - 4.2. Carbohydrates.
 - 4.3. Lipids.
 - 4.4. Proteins.
 - 4.5. Vitamins.
 - 4.6. Minerals.
 - 4.7. Conditionally essential nutrients.
5. Foods.
 - 5.1. Components: nature, classification, and functions.
 - 5.2. Nutritional classification of foods.
 - 5.3. Plastic foods.
 - 5.4. Energy foods.
 - 5.5. Mainly energetic foods.
 - 5.6. Regulatory foods.
 - 5.7. Complementary foods.
 - 5.8. Ultraprocessed foods. Impact on health.
6. Characteristics of a healthy diet. Dietary patterns.
7. Food guidance and food composition tables (TCA).
8. New tendencies in human feeding.
 - 8.1. Functional foods.
 - 8.2. Enriched and fortified foods.
9. Regulation of the energy balance.

B. NUTRITION IN SPECIAL SITUATIONS

1. Pregnancy and breastfeeding.
2. Early childhood, second childhood and adolescence.

3. Age and old age.
4. Exercise and sports.

C. NUTRITIONAL ASPECTS OF PREVALENT DISEASES

1. Eating disorders and metabolic nutritional consequences.
 - 1.1. Anorexia nervosa.
 - 1.2. Bulimia.
 - 1.3. Binge Eating Disorder.
 - 1.4. Others: orthorexia, vigorexia, pica, rumination.
2. Fasting.
3. Obesity.
 - 3.1. Concept, epidemiology, and functional classification.
 - 3.2. Physiopathology.
 - 3.3. Assessment of obesity as a chronic disease. Assessment of body composition
 - 3.4. Treatment.
4. Metabolic syndrome
5. Nutrition and diabetes mellitus.
6. Nutrigenetics, nutrigenomics, nutriepigenetics and nutraceuticals.
7. Nutrition and the cardiovascular system.
 - 7.1. Cholesterol and arteriosclerosis metabolism. Healthy dietary recommendations.
 - 7.2. Hyperlipidaemia. Importance of diet in the prevention of dyslipidaemia.
 - 7.3. Nutrition and blood pressure. Healthy dietary recommendations
8. Nutrition and metabolic aspects related to alcoholic beverages and their excessive consumption.
9. Nutrition and cancer.

D. NUTRITION AND PUBLIC HEALTH

1. Evaluation of the state and the nutritional risk.
 - 1.1. Nutrition status information.
 - 1.2. Assessment of nutritional status: anthropometric parameters, body composition, and method; laboratory procedures.
 - 1.3. Malnutrition: energy, protein.
2. Healthy lifestyle and nutrition education for health.

3. Nutrition and health claims of foods.

Learning activities and methodology

Title	Hours	ECTS	Learning outcomes
LABORATORY PRACTICES (PLAB)	3	0.12	3, 4, 5, 6, 8, 9, 12, 23, 27, 28, 30, 31, 32, 33
TUTORIALS	10	0.4	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 30, 31
SELF-STUDY / PREPARATION OF CASE-BASED WORK AND PRACTICES	34.5	1.38	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33
THEORY (TE)	20	0.8	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 29, 30, 32, 33
CASE RESOLUTION WORK (PA)	4	0.16	1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30, 31, 32, 33

- 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 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. Active learning and group work, as well as oral presentation and defense of the results are promoted.

- Supervised teaching:

Availability of supervised teaching, individuals and/or in groups, for helping in the autonomous study of human nutrition concepts and their application for the resolution of cases.

Use of AI: In this subject, the use of Artificial Intelligence (AI) technologies is allowed as an integral part of the development of the work, provided that the final result reflects a significant contribution of the student in the analysis and personal reflection. The student must clearly identify which parts have been generated with this technology, specify the tools used and include a critical reflection on how these have influenced the process and the final result of the activity. The lack of transparency in the use of AI will be considered a lack of academic honesty and may lead to a penalty in the grade of the activity, or greater sanctions in serious cases.

Annotation: within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continuous assessment activities

Title	Weight	Hours	ECTS	Learning outcomes
Written assessments through objective tests: multiple choice questions of theoretical knowledge	75%	2.5	0.1	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 30, 31
Written assessments through restricted-response essay examinations / oral presentations / questionnaires administered via Campus Virtual	25%	1	0.04	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33

The acquisition of the competences will be evaluated, including the learning of the nutrition of the human organism, the training to distinguish between the normality and the dysfunction, and the capacity of integration of theoretical and practical concepts.

1. Evaluation model:

- The theoretical and practical (laboratory and case practices) syllabus will be assessed.
- To pass the subject, it is necessary to pass the two Blocks with a minimum mark of 5.0 in each Block in the same academic year:

Bloc 1: A. Basic concepts of nutrition. B. Nutrition in special physiological situations. The theory of these two sections and the case practice-1 are included.

Bloc 2: C. Nutritional aspects of prevalent diseases. D. Nutrition and public health. The theory of these two sections and the case practice-1 and the laboratory practice are included.

2. Continuous evaluation

- The continuous evaluation will comprise:

2.1. Two partial exams (one for each Block) with multiple-choice questions to evaluate the theoretical concepts, as well as multiple-choice questions and/or short written questions of the concepts learned and trained in the corresponding practices, and integrated with the theory. The mark of each partial exam will be 40% of the overall final grade.

2.2. Tests throughout the course on the knowledge obtained in the laboratory (PLAB) and the case-based study (PAUL) practices: on-site tests and/or questionnaires conducted on the Moodle application. The mark of this set of tests will be 20% of the final grade (8% the PLAB and 6% each PAUL)..

TO PASS THE SUBJECT through continuous evaluation, it is necessary to pass the two partial exams with a minimum of 5.0 in each one, and the overall final grade also must be of 5.0 (40% partial exam 1 + 40% partial exam 2 + 20% Tests throughout the course about practices).

If one exam is passed and the other one is suspended, the mean will NOT be taken and the subject will be suspended.

If the two exams are passed but the final mark obtained including the practice grade is lower than 5.0, the

subject will be suspended and the entire subject will have to be recovered.

- Final exam of recovery

In case of not passing the continuous evaluation, a final examination for recovery will be carried out, in which the student will have to attend to the Blocks not passed in the partial exams of the same academic year.

The final exam will consist in tests of multiple-choice questions from each Block and about the knowledge of theory and the corresponding practices.

TO PASS THE SUBJECT, it is necessary to pass the two Blocks with a minimum of 5.0 each one. In this case, the overall final grade will be the mean between the marks obtained in each passed Block (50% Block 1 and 50% Block 2).

In case of not passing one of the two Blocks, the mean will not be taken, and the maximal mark obtained will be 4.8.

- A student who does not perform any evaluable task will be considered as "Not Evaluable".

- Exams and marks reviewing procedure

Students may submit claims to the statement of the exam questions during the 24 hours following the completion of the examination. The revision will be carried out in the schedule that will be properly announced in Moodle application.

A reviewing period for marks will also be scheduled.

- Irregularities in Assessment Activities

Any irregularity committed during an assessment activity (including academic fraud, plagiarism, or the improper use of AI, unless such use is expressly authorized in the course guide) that may lead to a significant alteration of the grade will result in a grade of 0 for that assessment activity.

If the course guide establishes that obtaining a minimum grade in that assessment activity is an essential requirement for passing the course, or if multiple irregularities are committed in the assessment activities of the same course, the final grade for the course will be 0.

In addition, and irrespective of the above, disciplinary proceedings may be initiated against any student who commits any of these irregularities.

3. Single evaluation

This course does not provide for a single assessment system.

Bibliography

Specific bibliography:

- BIESALSKI HK, GRIMM P, NOWITZKI-GRIMM S. Texto y Atlas de Nutrición. 8ª edición. Elsevier, 2021.

[Recurs electrònic]

<https://login.are.uab.cat/login?url=https://www.clinicalkey.com/student/nursing/content/toc/3-s2.0-C20200017524>

- ESCOTT-STUMP S. Nutrición, diagnóstico y tratamiento. 8ª edición. Wolters Kluwer 2016. [Recurs

electrònic]

<https://cienciasbasicas-llwwhealthlibrary-com.are.uab.cat/book.aspx?bookid=2871>

- GIL A. Tratado de Nutrición. 3ª edición. Ed. Médica Panamericana 2017. [Recurs electrònic]

https://bibcercador.uab.cat/permalink/34CSUC_UAB/1pvhg7/alma991010502475106709

- GIL A. Nutrición y Salud. Conceptos esenciales. 1ª edición. Ed. Médica Panamericana 2019.

- KATZ DL Nutrición en la práctica clínica. 2ª edición. Wolters Kluwer / Lippincott Williams & Wilkins, 2010.

- MAHAN LK, RAYMON JLS. KRAUSE'S Food & The nutrition care process. 14ª edición. Elsevier Saunders 2016.

- MARTÍNEZ HERNÁNDEZ, J. A.; PUY PORTILLO BAQUEDANO, M. de (dirs.). Fundamentos de nutrición y dietética: bases metodológicas y aplicaciones. Editorial Médica Panamericana, 2011.

<https://www-medicapanamericana-com.are.uab.cat/VisorEbookV2/Ebook/9788498356403>

- MATAIX J. Nutrición y Alimentación Humana. 2ª edición. Ergon 2009.

- SALAS-SALVADÓ J, BONADA A, TRALLERO R, SALÓ MA, BURGOS R. Nutrición y Dietética Clínica. 4ª edición. Elsevier 2019. [Recurs electrònic]

<https://www-clinicalkey-com.are.uab.cat/student/content/toc/3-s2.0-C20170044348>

General bibliography:

- HALL JE, GUYTON AC. Tratado de Fisiología Médica: Guyton & Hall (14ª ed.). Elsevier, 2021. [Recurs electrònic] <https://www-clinicalkey-com.are.uab.cat/student/content/toc/3-s2.0-C20200037060>

- TRESGUERRES JAF. Fisiología Humana (5ª ed.). McGraw-Hill-Interamericana, 2020. [Recurs electrònic] https://bibcercador.uab.cat/permalink/34CSUC_UAB/1gfv7p7/alma991010526756806709

Internet resources

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

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

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

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

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

- Federación Española de Sociedades de Nutrición, Alimentación y Dietética: <http://www.fesnad.org>

- Fundación Española de la Nutrición: <http://www.fen.org.es>

- Sociedad Española de Nutrición: <http://www.sennutricion.org>

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

- Sociedad Española de Obesidad (SEEDO): <https://www.seedo.es/>

Specific bibliography for the laboratory practice

The specific bibliography for the laboratory practice will be provided with the practical guide.

Software

No special software is used.

Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this [link](#). To access the information, you will need to enter the course CODE

Type of teaching	Group	Language	Semester	Shift
(PAUL) Classroom practices	1	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	1	Catalan/Spanish	second semester	afternoon
(PAUL) Classroom practices	2	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	2	Catalan/Spanish	second semester	afternoon
(PAUL) Classroom practices	3	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	3	Catalan/Spanish	second semester	afternoon
(PAUL) Classroom practices	4	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	4	Catalan/Spanish	second semester	afternoon
(PAUL) Classroom practices	5	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	5	Catalan/Spanish	second semester	afternoon
(PAUL) Classroom practices	6	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	6	Catalan/Spanish	second semester	afternoon
(PAUL) Classroom practices	7	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	7	Catalan/Spanish	second semester	afternoon
(PAUL) Classroom practices	8	Catalan/Spanish	second semester	morning-mixed

(PLAB) Practical laboratories	8	Catalan/Spanish	second semester	afternoon
(PAUL) Classroom practices	9	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	9	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	10	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	11	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	12	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	13	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	14	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	15	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	16	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	17	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	18	Catalan/Spanish	second semester	morning-mixed
(TE) Theory	101	Catalan/Spanish	second semester	morning-mixed
(TE) Theory	102	Catalan/Spanish	second semester	morning-mixed
(TE) Theory	103	Catalan/Spanish	second semester	morning-mixed