

Human Nutrition

Code: 103268
ECTS Credits: 6

2025/2026

Degree	Type	Year
Food Science and Technology	OB	2

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Teaching groups languages

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

Prerequisites

To successfully follow the course, students are advised to have prior knowledge of human physiology, biochemistry, and food products. Such background will facilitate the understanding of digestion, absorption, and nutrient metabolism processes, as well as their interaction with different food groups and nutritional requirements.

Objectives and Contextualisation

1. Describe the basic concepts, historical foundations, and main bibliographic sources related to human nutrition.
2. Demonstrate knowledge of the physiological and biochemical bases of nutrient metabolism, as well as nutritional needs and recommendations for healthy populations.
3. Identify the main systems used to assess the nutritional status of populations and the factors that may influence them.
4. Interpret the nutritional composition of foods and analyze their role in health promotion and maintenance.

5. Recognize the recommended dietary guidelines for healthy individuals, considering different life stages, specific physiological situations, and common nutrition-related pathologies.
6. Analyze the nutritional characteristics of food products intended for population groups with specific needs.
7. Evaluate the effects of food technology on the nutritional value of foods.

Competences

- Analyse, summarise, resolve problems and make professional decisions.
- Apply the scientific method to resolving problems.
- Design experiments and interpret the results.
- Design, formulate and label foods that fit in with the needs of consumers and their cultural traits.
- Display knowledge of nutrients, of their bioavailability and function in the organism, and the bases of nutritional balance.
- Display knowledge of nutritional needs and the fundamental principles governing relationships between food and health.
- Search for, manage and interpret information from different sources.
- Use IT resources for communication, the search for information within the field of study, data processing and calculations.

Learning Outcomes

1. Analyse, summarise, resolve problems and make professional decisions.
2. Apply the scientific method to resolving problems.
3. Design experiments and interpret the results.
4. Discern the anthropometric, physiological and biochemical measures that are of interest in human nutrition.
5. Enumerate nutritional needs.
6. Explain the basic principles of human nutrition.
7. Explain the relationship between nutrition and health.
8. Identify and interpret the diversity of foods and its influence on human nutrition.
9. Identify the national and international bodies that define them and how to obtain up-to-date information.
10. Interpret data from studies on human nutrition.
11. Interpret nutrition tables, both on paper and using computer programmes.
12. Interpret the metabolism of energetic nutrients.
13. Interpret the metabolism of non-energetic nutrients.
14. Interpret the nutritional needs and recommendations of the population at different stages in life.
15. Present the effects of antinutritional substances on human nutrition.
16. Provide a basis for evaluation of nutritional needs in humans.
17. Search for, manage and interpret information from different sources.
18. State health indicators.
19. Use IT resources for communication, the search for information within the field of study, data processing and calculations.

Content

SECTION 1 - FOUNDATIONS OF NUTRITION

Unit 1. Introduction to human nutrition

Concept and objectives of nutrition. Historical evolution of nutritional knowledge. Bibliographic sources and reference institutions.

Unit 2. Physiological and biochemical bases of nutrition

Digestion, absorption and metabolism of nutrients. Hormonal regulation. Gut microbiota and its functional role in health.

Unit 3. Water and electrolytes

Physiological functions, requirements, dietary sources, and imbalances related to fluid and electrolyte balance.

Unit 4. Energy and energy requirements

Energy content of food. Energy use in the human body. Direct and indirect calorimetry. Estimation of energy needs and health implications.

Unit 5. Carbohydrates

Digestion, absorption and metabolism. Needs and recommendations. Types of carbohydrates and dietary fiber. Digestion inhibitors. Positive and negative effects on health.

Unit 6. Proteins and amino acids

Protein quality. Metabolism. Nutritional needs and recommendations. Food sources.

Unit 7. Lipids and cholesterol

Nutritional functions. Classification of lipids. Digestion and metabolism. Health effects of fat and cholesterol consumption.

Unit 8. Vitamins

Physiological functions, classification and metabolism. Requirements, dietary sources, and effects of deficiency or excess.

Unit 9. Minerals

Metabolism and regulation. Essential functions, nutritional requirements and consequences of deficiencies or excess intake.

Unit 10. Alcohol and other non-nutritive substances

Metabolism and physiological effects of alcohol. Energy contribution. Non-nutritive and antinutritional substances: biological activity and health implications.

SECTION 2 - APPLIED NUTRITION

Unit 11. Nutritional status assessment

Indicators and evaluation parameters. Anthropometric, biochemical and clinical measures. Nutritional epidemiology studies.

Unit 12. Eating behavior and influencing factors

Biological, cultural, social and psychological determinants of food choice. Symbolic and emotional value of food.

Unit 13. Review of nutritional recommendations and current criteria

Establishment of nutritional requirements. Dietary guidelines. Nutritional objectives. Food surveys and public health policies.

Unit 14. Balanced diet in healthy adults

Interpretation of dietary recommendations. Guidelines for healthy eating. Qualitative and quantitative balance.

Unit 15. Functional foods and products for specific populations

Definition and evolution. Differentiating characteristics. Role in health promotion and disease prevention.

Unit 16. Alternative diets

Types of vegetarian diets. Nutritional considerations. Specific and adapted food products.

Unit 17. Nutrition through different life stages and physiological situations

Nutritional recommendations during pregnancy, lactation, childhood, adolescence, adulthood, aging, and physical activity.

Unit 18. Nutrition and public health: prevalent pathologies

Dietary guidelines for obesity, hypertension, dyslipidemia and diabetes. Adaptation of foods to specific health needs.

SECTION 3 - FOOD TECHNOLOGY AND NUTRITION

Unit 19. Food processing and nutritional quality

Impact of processing techniques on nutrient content and bioavailability. Strategies to minimize nutrient loss.

Unit 20. Encapsulation of bioactive ingredients and nutritional protection

Techniques to encapsulate active and bioactive ingredients to improve their stability, resistance to digestion, and bioavailability. Applications in functional foods and their health impact.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
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Type: Directed			
Practices in the computer room	9	0.36	1, 2, 17, 3, 19
Seminars	8	0.32	5, 7, 16, 14
Theoretical classes of foundations of human nutrition	18	0.72	1, 2, 17, 5, 6, 15, 8, 12, 13, 19
Theoretical classes of human nutrition	18	0.72	1, 2, 17, 7, 16, 9, 14, 19
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Type: Autonomous			
Practical works of the subject	89	3.56	1, 2, 17, 18, 3, 4, 5, 6, 7, 15, 16, 9, 8, 12, 13, 10, 14, 11, 19
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Practical works

1. Intake evaluation (AI): Computer room. 1,5 hours.
2. Calculation of needs (NN): Computer room. 1,5 hours.
3. Computer programs (IP): Computer room. 3 hours.
4. Troubleshooting (RP); Computer room. 3 hours.
5. Nutrition Labeling (EN): Classroom. 3 hours.
6. Functional foods (AF); Classroom. 3 hours.

7. Light foods (AL): Classroom. 2 hours.

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

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Applied theoretical evaluation of human nutrition	30% of the final grade	1.5	0.06	18, 5, 7, 16, 9, 8, 10, 14
Attendance and participation in the development of practical cases	5 % of the final grade	1	0.04	1, 2, 3, 4, 11, 19
Evaluation of nutritional status	20 % of the final grade	2	0.08	1, 2, 17, 4, 11, 19
Food evaluation and nutritional strategies	15% of the final grade	2	0.08	1, 2, 17, 3, 9, 11, 19
Theoretical evaluation of the foundations of Human Nutrition	30% of the final grade	1.5	0.06	1, 5, 6, 7, 15, 16, 12, 13

EVALUATION

Student evaluation will be carried out through continuous assessment, with the following distribution:

1. Theoretical exams (60%)
 - 1.1. Foundations of Nutrition exam: 30%
 - 1.2. Applied Nutrition exam: 30%

A minimum score of 5 out of 10 in each of the theoretical exams is required to pass the course.

2. Practical assessment (40%)
 - 2.1. Attendance at practical sessions and seminars: 5%
 - 2.2. Case study resolution and applied assignments: 35%
 - 2.2.1. Foundations of Nutrition case studies: 20%
 - 2.2.2. Applied Nutrition case studies: 10%
 - 2.2.3. Oral presentation of case work: 5%

The theoretical exams will consist of two tests with multiple-choice and/or short or long answer questions. The practical part will be assessed based on student participation in sessions, case study resolution, and the oral presentation of one assignment.

If the minimum criteria for passing are not met, students will have to retake the failed part through a recovery theoretical exam.

This reassessment will take place during the scheduled recovery evaluation period. After the evaluation, students will be informed about which parts of the course have been passed and which must be recovered, if applicable.

USE OF ARTIFICIAL INTELLIGENCE (AI) TECHNOLOGIES

In this course, the use of Artificial Intelligence (AI) technologies is permitted as an integral part of the development of assignments, provided that the final outcome reflects a significant contribution from the student in terms of analysis and personal reflection. The student must clearly identify which parts have been generated using such technologies, specify the tools used, and include a critical reflection on how they influenced the process and final result. Lack of transparency in the use of AI will be considered academic dishonesty and may result in a penalty in the assignment grade or more serious sanctions in severe cases.

NOT ASSESSABLE

Students will be considered "Not Assessable" if they have not participated in assessment activities that represent at least 15% of the total course grade.

SINGLE ASSESSMENT

This course/module does not contemplate the single assessment system.

Bibliography

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DUPIN H et al. (1992) *La alimentación humana*. Barcelona: Bellaterra.

HERNANDEZ M, SASTRE A. (1999) *Tratado de Nutrición*. Madrid: Díaz de Santos.

IRA FOX, S. (2003). *Fisiología humana*. 7^a Edición. McGraw-Hill Interamericana. Madrid.

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MUÑOZ M, ARANCETA J, GARCÍA-JALÓN I (eds.) (1999). *Nutrición aplicada y dietoterapia*. Navarra: EUNSA.

PEMBERTON, C. (1993). *Manual de dietética de la Clínica Mayo*. Medici. Barcelona.

ROBINSON. (2001). *Bioquímica y valor nutritivos de los alimentos*. Acribia, S.A.. Zaragoza.

SALAS J, BONADA A, TRALLERO R, SALÓ M.E. (2000). *Nutrición y dietética clínica*. Barcelona: Masson.

Sociedad Española de Nutrición Comunitaria (2004). *Guía de la alimentación saludable*. Madrid: SENC.

Sociedad Española de Nutrición Comunitaria (2001). *Guías alimentarias para la población española. Recomendaciones para una dieta saludable*. Madrid: IM&C, SA.

Food composition tables

FARRAN A, ZAMORA R, CERVERA P. *Tablas de composición de alimentos del CESNID - Taules de composició d'aliments del CESNID*. Barcelona: Edicions Universitat de Barcelona, 2003. 247p. ISBN 84-8338-457-4

FAVIER J-C, et al. *Répertoire général des aliments: Tables de composition = Composition tables*. 2è. Edition revue et augmentée. Paris: Technique & Documentation: INRA: Ciqual-Regal, cop. 1995. XXVII, 897p. ISBN 2-85206-921-0

McCANCE RA, WIDDOWSON E, HOLLNDE B. *The Composition of foods*. Cambridge (etc.): Royal Society of Chemistry: Ministry of Agriculture, Fisheries and Food, 1994. XI, 462 p. ISBN 0-85186-391-4

MATAIX J. *Tabla de composición de alimentos*. 4ª ed. Granada: Instituto de Nutrición y Tecnología de alimentos: Universidad de Granada, 2003

MINISTERIO DE SANIDAD Y CONSUMO. *Tablas de Composición de Alimentos Españoles*. Madrid: Ministerio de Sanidad y Consumo. Secretaría General Técnica. Centro de publicaciones. 1997

MOREIRAS O, et al. *Tablas de composición de alimentos*. 7ª ed. Madrid: Pirámide, 2003

SOUCI SW, FACHMANN W, KRAUT H. *Food composition and nutrition tables; Die zusammensetzung der lebensmittel nährwert-tabellen; la composition des aliments tableaux des valeurs nutritives*. 5th ed., rev. and completed. Medpharm: CRC Press, 1994.

VAN DEN BOOM A. *Comer bien. Guía práctica de la composición de los alimentos*. Madrid: Nuer Ediciones. 2000. 119p. ISBN 84-8068-065-2

Software

The Nutritics program of professional nutrition will be used, to know the composition of the different foods and to be able to develop the nutritional self-evaluation work.

Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	1	Catalan/Spanish	second semester	morning-mixed
(PAUL) Classroom practices	2	Catalan/Spanish	second semester	morning-mixed
(TE) Theory	1	Catalan	second semester	morning-mixed