1. OVERVIEW

Subject area	Foundations of Biology, Biochemistry and Nutrition
Degree	Bachelor's Degree in Nursing
School/Faculty	Biomedical and Health Sciences
Year	1st
ECTS	6 ECTS
Type	Core
Language(s)	Spanish
Delivery Mode	On campus
Semester	1

2. INTRODUCTION

This is one of the standard core educational subject areas for first year Nursing students, providing a basis for the development of the more specific subject areas in the same year and later on in the degree. In particular, basic knowledge of biology and biochemistry is necessary for studying human beings at the anatomical and physiological level, including nutritional processes. Knowledge, skills and abilities in relation to food, nutrition and dietetics are necessary to provide care for both healthy and unwell people at different stages of the life cycle.

3. SKILLS AND LEARNING OUTCOMES

Basic skills (CB, by the acronym in Spanish):

- CB1: Students have shown their knowledge and understanding of a study area that builds on general secondary school education, and are usually at the level where, with the support of more advanced textbooks, they may also demonstrate awareness of the latest developments in their field of study.
- CB3: Students have the ability to gather and interpret relevant data (normally within their area of study) to form opinions which include reflecting on relevant social, scientific or ethical matters.

General skills (CG, by the acronym in Spanish):

- CG2: Plan and provide nursing care directed at individuals, families or groups, geared towards effective results for health and assess their impact through clinical and care practice guidelines, which describe the processes by which a health problem is diagnosed, treated or cared for.

Cross-curricular skills (CT, by the acronym in Spanish):

- CT2: Manage information, resources and technologies independently to achieve your learning objectives.
- CT3: Contribute actively in work teams, assuming shared responsibilities.

General European skills (CUE, by the acronym in Spanish):

- CUE1: Independently diagnose the necessary nursing care using theoretical and clinical knowledge, in order to plan, organise and manage nursing care when treating patients on the basis of the knowledge and skills acquired in accordance with paragraphs 6(a), (b) and (c), with the aim of improving professional practice.

Specific skills (CE, by the acronym in Spanish):

- CE1. Know and identify the structure and function of the human body and understand the molecular and physiological basis of cells and tissues.
- CE5. Understand and assess the nutritional needs of both healthy people and people with health problems throughout their life cycle, in order to promote and support healthy eating patterns. Identify nutrients and the foods containing them. Identify the most common nutritional problems and choose the most appropriate dietary recommendations.

Learning outcomes (RA, by the acronym in Spanish):

- RA1. Explain the eukaryotic cell and its relationship to the metabolic processes that sustain human life.
- RA2. Describe the main metabolic strategies that humans use to obtain energy and their adaptation and coordination in response to different nutritional statuses.
- RA3. Recognise the basic components of food in terms of energy, fluids, macronutrients and micronutrients.
- RA4. Plan a healthy menu, taking into account the nutritional composition and recommended frequency of consumption of the different food groups.
- RA5. Determine the nutritional status and needs of people at different stages of life.
- RA6. Identify the characteristics of hospital diets.

The following table shows how the skills developed in the subject area relate to the intended learning outcomes:

Skills	Learning outcomes
CB1, CT2, CE1	RA1. Explain the eukaryotic cell and its relationship to the metabolic processes that sustain human life.
CB1, CB3, CT2, CE1	RA2. Describe the main metabolic strategies that humans use to obtain energy and their adaptation and coordination in response to different nutritional statuses.
CT2, CE4	RA3. Recognise the basic components of food in terms of energy, fluids, macronutrients and micronutrients.
CB3, CG2, CUE1, CT3, CE4	RA4. Plan a healthy menu, taking into account the nutritional composition and recommended frequency of consumption of the different food groups.
CB3, CG2, CT3, CE4	RA5. Determine the nutritional status and needs of people at different stages of life.

CG2, CT3, CUE1, CE4	RA6. Identify the characteristics of hospital diets.

4. CONTENTS

The subject area is divided into two blocks (“Block 1: Foundations of Biology and Biochemistry" and "Block 2: Foundations of Nutrition"), each of which has its own corresponding topics:

Block 1. Foundations of Biology and Biochemistry
- Topic 1. Foundations of Biochemistry.
- Topic 2. Cell biology.
- Topic 3. Introduction to metabolism. Metabolic adaptation and coordination.
- Topic 4. Introduction to human genetics.

Block 2. Foundations of Nutrition.
- Topic 1. Basic concepts.
- Topic 2. Energy.
- Topic 3. Macronutrients.
- Topic 4. Micronutrients and fluids.
- Topic 5. Classification and composition of food.
- Topic 6. Consumption and eating habits: Frequency of consumption and healthy distribution of food.
- Topic 7. Modified diets.
- Topic 8. Progressive diets.
- Topic 9. Assessment of nutritional status.
- Topic 10. Nutrition in the physiological states of life.

5. TEACHING-LEARNING METHODS

The types of teaching-learning methods are as follows:
- Lecture.
- Case studies.
- Collaborative learning.
- Problem-based learning.
- Project-based learning.
- Workshop-based learning.

6. LEARNING ACTIVITIES

The types of learning activities, plus the amount of time spent on each activity, are as follows:

Learning activity	Number of hours
AF1. Lectures	41

AF2. Asynchronous lectures	10
AF4. Workshops and/or laboratory work	8
AF6. Case studies	3
AF7. Problem-solving	20
AF8. Group work	12
AF9. Group tutorials	2
AF18. On-campus knowledge tests	4
AF20. Independent working	50
TOTAL	**150**

7. ASSESSMENT

The assessment systems, plus their weighting in the final grade for the subject area, are as follows:

Assessment system	Weighting
On-campus theory exams: • Block 1: 20% • Block 2: 30%	50%
Reports and written work • Block 1: Case studies: 10% • Block 2: Hospital diets: 20%	30%
Laboratory work • Block 2: 20%	20%

On the Virtual Campus, when you open the subject area, you can check the guide with the details of your assessment activities, including the deadlines and assessment procedure for each.

8. BIBLIOGRAPHY

The works of reference for following up this subject area are:

- Bloque 1: Lehninger. Principios de Bioquímica. D.L.Nelson y M. M. Cox (Eds). Ediciones Omega, S.A. 6a ed. 2013 e Introducción a la Biología Celular. Alberts B. Ed Panamericana, 3ª ed. 2011.
- Bloque 2: Nutrición y Dietética en los estados fisiológicos del ciclo vital. Alfonso Perote Alejandra, Soraya Polo Jiménez. FUDEN (Fundación para el desarrollo de la enfermería). 1era Edición, 20

The following is a recommended bibliography for Foundations of Biology and Biochemistry:

- Alberts. Biología Molecular de la Célula. Editorial Omega, 5a ed., Barcelona. 2010
- Calvo A. Biología Celular Biomédica. Editorial Elsevier, 1a ed. 2015
- Cooper GM. La célula. Ed. Marbán, 7a ed. 2017
- Mathews y Van Holde. Bioquímica. McGraw-Hill. Interamericana, 3a ed. 2008
- Stryer, Berg y Tymoczko. Bioquímica. Editorial Reverté, S.A. 5a ed. 2014
- Voet D, Voet JG, Pratt CW. Fundamentos de Bioquímica. La vida a nivel molecular. Ed. Panamericana, 4a ed. 2016.
- Feduchi E, et al. Bioquímica. Conceptos esenciales. Ed. Panamericana, 2o ed., 2015.
- Thomas M. Devlin. Bioquímica, libro de texto con aplicaciones clínicas. Ed. Reverté, S.A., 4a ed. 2004.
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- Lieberman M, Marks A, Peet A. Bioquímica médica básica: un enfoque clínico. Wolters Kluwer- Lippincott Williams & Wilkins. Philadelphia. 2012.
- Griffiths JA. Genética. Ed. McGraw-Hill, 9a ed. 2009.
- Klug S, Cummings MR, Spencer CA. Conceptos de Genética. Ed. Pearson, 8a ed. 2008.
- Nussbaum RL, Thompson & Thompson. Genética en Medicina. Ed. Elsevier Masson, 8a ed. 2016

The following is a recommended bibliography for Foundations of Nutrition:

- Tratado de Nutrición. Tomo I: Bases fisiológicas y bioquímicas de la Nutrición. Ángel Gil. Ed. Panamericana, S.A. 3era Edición, 2017.
- Tratado de Nutrición. Tomo II: Bases moleculares de la nutrición. Ed. Panamericana, S.A. 3era Edición, 2017.
- Tratado de Nutrición. Tomo III: Composición y calidad nutritiva de los alimentos. Ángel Gil. Ed. Panamericana, S.A. 3era Edición, 2017.
- Tratado de Nutrición. Tomo IV: Nutrición humana en el estado de salud. Ángel Gil. Ed. Panamericana,S.A. 3era Edición, 2017.
- Tratado de Nutrición. Tomo V: Nutrición en la enfermedad. Ángel Gil. Ed. Panamericana, S.A. 3era Edición, 2017.
- Libro blanco de la Nutrición en España. FEN. 2013
- Fundamentos de Nutrición y Dietética: Bases metodológicas y aplicaciones. Alfredo Martínez Hernández, María del Puy Portillo Baquedano. Ed. Panamericana, S.A. Edición, 2018.