1. OVERVIEW

Subject area	Biochemistry, Nutrition, and Dietetics
Degree	Nursing degree and Double degree in Physiotherapy and Nursing."
school/ Faculty	Biomedical and Health Sciences
Year	**1 st**
ECTS	6
Type	Compulsoty
Lenguage/s	Spanish
Delivery Mode	On campus
Semester	Semester 2

2. INTRODUCTION

The program of this subject aims to provide knowledge of Biochemistry, Nutrition, and Dietetics, which are essential in the training of any Health Sciences professional. The Biochemistry component (50% of the total subject) encompasses the principles and laws of Chemistry and Physics involved in the normal functioning of the human body, as well as the physical and chemical fundamentals of vital processes at molecular, biological, and metabolic levels. This part provides basic concepts useful in different Health-related subjects: Biology, Pharmacology, Physiology, Pathophysiology, among others.

On the other hand, Nutrition and Dietetics (50% of the total subject) is the discipline that deals with appropriate nutrition, both in health and disease (Dietetics), according to knowledge of nutrition physiology and metabolism in the former case (health), and about the pathophysiology of functional or metabolic disorders in the latter. In essence, this science utilizes nutrition knowledge to provide healthy eating.

3. SKILLS AND LEARNING OUTCOMES

Basic competences:

• BC1: That students have demonstrated possession and understanding of knowledge in an area of study that builds on general secondary education and is usually found at a level that, while supported by advanced textbooks, also includes some aspects involving knowledge from the forefront of their field of study.

• BC2: That students know how to apply their knowledge to their work or vocation in a professional manner and possess the competencies typically demonstrated through the development and defense of arguments and problem-solving within their area of study.

• BC3: That students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include reflection on relevant social, scientific, or ethical issues.

• BC4: That students can convey information, ideas, problems, and solutions to both specialized and non-specialized audiences.

• BC5: That students have developed the learning skills necessary to undertake further studies with a high degree of autonomy.

• CG14: Establish evaluation mechanisms, considering scientific-technical aspects and quality.

• CG15: Work with the team of professionals as a basic unit in which professionals and other personnel of care organizations are structured in a uni or multidisciplinary and interdisciplinary manner.

Cross-cutting competences:

• CT01: Responsibility. That the student is capable of assuming the consequences of the actions they take and being accountable for their own acts.

• CT07: Teamwork. That the student is capable of actively participating in achieving a common goal, listening to, respecting, and valuing the ideas and proposals of the other members of their team.

• CT08: Ethical-social competence. Showing ethical behaviors and social commitment in the performance of professional activities, as well as sensitivity to inequality and diversity. Therefore, through the development of this competence, a greater or lesser contribution will be made to the achievement of Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda. (https://www.un.org/sustainabledevelopment/es/).

• CT09: Planning. That the student is capable of effectively determining their goals and priorities by defining the actions, deadlines, and optimal resources required to achieve such goals.

• CT10: Innovation-Creativity. That the student is capable of devising new and different solutions to problems that add value to the issues they face.

Specific competences:

• CE9: Recognize life-threatening situations and be able to perform basic and advanced life support maneuvers.

• CE5: Understand and assess the nutritional needs of healthy individuals and those with health problems throughout the life cycle, to promote and reinforce healthy dietary behaviors. Identify nutrients and the foods in which they are found. Identify the most prevalent nutritional problems and select appropriate dietary recommendations.

• CE6: Apply technologies and information and communication systems to health care.

• CE7: Understand the physiopathological processes and their manifestations and the risk factors that determine health and disease states at different stages of the life cycle.

• CE1: Know and identify the structure and function of the human body. Understand the molecular and physiological bases of cells and tissues.

Learning outcomes:

• LO1. Ability to recognize and interpret normal or changing signs of health/illness, suffering, and individual incapacity.

• LO2: Ability to question, evaluate, interpret, and critically synthesize a range of...

• LO3. Relevant knowledge of and ability to apply natural and life sciences.

Ability to adapt to highly complex and ambiguous social situations in nursing practice**.**

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

SKILLS	LEARNING OUTCOMES
CB1, CB2, CB4, CB5, CE1, CE5, CE7, CE9, CG14, CG15, CT07, CT08, CT10	RA 1
CB1, CB2, CB3, CB4, CB5, CE1, CE5, CE6, CE7, CE9, CG14, CG15, CT01, CT07, CT08, CT09, CT10	RA 2
CB1, CB2, CB3, CB4, CB5, CE1, CE5, CE7, CG15, CT01, CT07,CT08, CT10	RA 3

4. CONTENTS

The subject is organized into 2 learning units, which, in turn, are divided into topics.

LEARNING UNIT 1: BIOCHEMISTRY
Lesoon 1: Biochemical bases of life, solutions
Lesoon 2: Biomolecules: carbohydrates, lipids, proteins, nucleic acids
Lesoon 3: Molecular functions, membranes
Lesoon 4: Metabolism of carbohydrates, lipids, nitrogen compounds
Lesoon 5: Replication, transcription, and translation

LEARNING UNIT 2: NUTRITION and DIETETICS
Lesoon 1: Feeding and Nutrition: generalities, nutrients and micronutrients
Lesoon 2: Food groups
Lesoon 3: Food safety. Labeling
Lesoon 4: Nutritional balance. Qualitative and quantitative healthy diet
Lesoon 5: Feeding and nutritional needs at different stages of life

5. TEACHING-LEARNING METHODS

Here are the types of teaching-learning methodologies that will be applied:

- Master class
- Problem-Based Learning: Case analysis and problem-solving
- Community tasks: Practical exercises and group presentations
- Corporate learning: Seminars and Workshops
- Simulation environments

6. LEARNING ACTIVITIES

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

On campus::

Learning activity	Number of hours
Master Classes	40
Practical exercices	25
Seminars and presentations	8
Self-study	40
Tutorships	10
Cases analysis and Simulation environments	25
Knowledge test	2
TOTAL	**150**

7. ASSESSMENT

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

On campus:

Assessment system	weighting
Oral presentation (LU 1+ LU2)	10%
briefcase (LU1+ LU2)	20%
Directed individual work (LU1+ LU2)	20%
Knowledge test (LU1 + LU2)	50%

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:

LU1 Biochemistry

- Stryer, L., Berg, J. M., & Tymoczko, J. L. (2008). Bioquímica (6ª ed.). Barcelona: Reverté.
- Lehninger, A.L., Cox, M.M. & Nelson, D.L. (2008). Biochemistry (8th ed.). New York: W.H. Freeman and Company.
- Recio Cano, MN (2012) Bioquimica en ciencias de la salud. Ediciones D.A.E. (Enferteca) ISBN:9788492815463

LU2 Nutrition, and Dietetics:

- Salas-Salvado, Jordi. (2014). NUTRICION Y DIETETICA CLINICA. Editorial MASSON. ISBN:9788445825136
- Hernández García (2016) Nutrición y dietética. Ediciones D.A.E.(Enferteca) ISBN:9788492815845

The recommended bibliography is indicted below:

LU1 Biochemistry:

- Recio Cano, MN (2012) Bioquimica en ciencias de la salud. Ediciones D.A.E. (Enferteca) ISBN:9788492815463
- Chang, R., & Goldsby, K. A. (2017). *Química* (12ª ed.). Madrid: McGraw-Hill.
- Bissonnette, C., Herring, F.G., Madura, J.D. & Petrucci, R.H. (2017). *Química General* (11ª ed.). Madrid: Pearson.
- Timberlake, K.C. (2013). *Química General, Orgánica y Biológica* (4ª ed.). Madrid: Pearson.
- Rex, A. F., & Wolfson, R. (2011). *Fundamentos de Física*. Madrid: Pearson.
- Tipler, P.A., & Moska, G. (2012). *Física para la ciencia y la tecnología* (6ª ed., Vols. 1-2). Barcelona: Reverté.
- Cromer, A.H. (1996). *Física para las ciencias de la vida* (2ª ed.). Barcelona: Reverté.
- Jou, D., Llebot, J.E., & Pérez, C. (2007). *Física para ciencias de la vida* (2ª ed.). Madrid: McGraw-Hill.
- Kane, J.W., & Sternheim, M.M. (2009). *Física* (2ª ed.). Barcelona: Reverté.

LU2 Nutrition, and Dietetics:
:

- Carbajal Azcona, A.(2013) MANUAL DE NUTRICIÓN Y DIETETICA. https://www.ucm.es/nutricioncarbajal
- Mahan&Raymond. (2017) KRAUSE.DIETOTERAPIA. (14ªed). Editorial ELSEVIER. ISBN:9788491130840
- Mataix Verdú, José. (2009). NUTRICION Y ALIMENTACIÓN Humana. Editorial ERGON. ISBN:9788484736646
- Royo Bordonada, M.A. Coordinador (2017). NUTRICIÓN EN SALUD PÚBLICA. http://publicaciones.isciii.es