1. OVERVIEW

Subject Area	Food Technology
Degree	Bachelor's Degree in Human Nutrition and Dietetics
School/Faculty	School of Biomedical and Health Sciences
Year	Second year
ECTS	3 ECTS
Type	Compulsory
Language(s)	Spanish
Delivery Mode	On-campus/blended
Semester	Semester 4
Coordinating professor	Dr Luisa Solano Pérez

2. INTRODUCTION

This subject area is part of Module 2, Food Science, and is a compulsory subject area delivered in the second semester of the second year of the Bachelor's Degree in Human Nutrition and Dietetics.

The overall objective of this subject area is to study food technology in relation to other sciences, with reference to the food industry, its characteristics and organisation. To achieve this, the following secondary objectives are pursued:

- Knowledge of operations within the food industry in terms of manufacturing, packaging and food preservation.
- Influence of technological processes on the nutritional value of food.
- Types of processing technology for different food groups.
- New technology applied to food

3. SKILLS AND LEARNING OUTCOMES

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

- **CB2**: Students can apply their knowledge to their work professionally and possess the necessary skills, usually demonstrated by forming and defending opinions, as well as resolving problems within their study area.
- **CB3**: Students have the ability to gather and interpret relevant data (usually within their study area) to form opinions which include reflecting on relevant social, scientific and ethical matters.

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

- **CG9**: Be familiar with the basic processes involved in the production, processing and preservation of both animal and plant-based foods.

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

- **CT7**: Decision making: ability to choose between different options or methods to effectively solve different problems or situations.
- **CT9**: Ability to put knowledge into practice, using the skills acquired in the classroom to mock situations based on real life experiences that occur in the relevant profession.

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

- **CE47**: Understand the concept of food technology and its relationship with other sciences, as well as the influence of technological processes on the nutritional value of food.
- **CE48**: Know the different types of processing technology for different food groups.
- **CE49**: Be familiar with new technologies applied to food. Biotechnology

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

- RA1: Be familiar with food production, processing and preservation systems and technology used.
- RA2: Know the modifications that foodstuffs undergo as a result of technology and the cooking process.

The following table shows how the skills developed in the subject area match up with the intended learning outcomes:

Skills	Learning outcomes
CB2, CB3, CG9, CT7, CT9, CE47, CE48, CE49	RA1: Be familiar with food production, processing and preservation systems and technology used.
CB2, CB3, CG9, CT7, CT9, CE47, CE48, CE49	RA2: Know the modifications that foodstuffs undergo as a result of technology and the cooking process.

4. CONTENTS

The subject area is divided into three learning units, which are then divided into various topics:

Learning Unit 1 (UA1). Introduction to Food Technology and the Food Industry: concepts and links with other sciences.

- Topic 1. Concept of Food Technology and new technology.
- Topic 2. The Food Industry: characteristics, subsectors and organisation.

Learning Unit 2 (UA2). Operations in manufacturing, packaging and food preservation.

- Topic 3. Operations in food manufacturing.
- Topic 4. Food packaging: general characteristics and types.
- Topic 5. Food preservation.

Learning Unit 3 (UA3). Main technological processes for certain food groups and their effect on the nutritional value of food.

- Topic 6. Technological processes applied to food
- Topic 7. Influence of technological processes on the nutritional value of food.

In addition to these academic units, students will be supported with resources and slides with contents that will be covered in the subject area. These will also be assessed in the knowledge test.

5. TEACHING/LEARNING METHODS

The types of teaching/learning methods are as follows:

- Lectures
- Case studies
- Collaborative learning
- Problem-based learning
- Simulated environments
- Spoken presentations by students

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
Lecture	15h
Independent working	12.5 h
Case studies	10h
Debates and discussions	6h
Spoken presentations by students	5h
Written reports and essays	4 h
Lab work	9h
Tutorials	10h

Knowledge test	3 h
TOTAL	**74.5 h**

Blended learning

Learning activity	Number of hours
Reading of content	7.5 h
Online seminars	7.5 h
Independent working	12.5 h
Case studies	9 h
Debates and discussions	10 h
Spoken presentations by students	6 h
Written reports and essays	5h
Lab work	10h
Online tutorials	4 h
Knowledge test	3.5 h
TOTAL	**75h**

7. ASSESSMENT

The assessment methods, together with their respective weighting towards the final grade for the subject, are as follows:

On campus:

Assessment method	Weighting
Analysis of case studies and problem-solving	20%
Submission of reports	10%
Spoken presentation	5%
Participation in debates	5%
Laboratory work	20%
Knowledge test	40%

Blended:

Assessment method	Weighting
Analysis of case studies and problem-solving	20%
Submission of reports	10%
Spoken presentation	5%
Participation in debates	5%
Laboratory work	20%
Knowledge test	40%

On the Virtual Campus, when you open the subject area, you can see all the details of your assessment activities, including the deadlines and assessment procedures for each activity.

8. BIBLIOGRAPHY

The reference work for following this subject area is:

- Carballo, B., López de Torre, G., & Madrid, A. (2001). Tecnología de la carne y de los productos cárnicos. Madrid: AMV : Mundi-Prensa
- Durand, P. Tecnología de los productos de charcutería y salazones. Ed. Acribia, S.A. Zaragoza 2002.
- Essien, E. (2004). Fabricación de embutidos: Principios y práctica. Zaragoza: Acribia. Eurocarne. (2003). Carnes y productos cárnicos de calidad. Madrid: Estrategias Alimentarias
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- Hall, GM, Pla Soler, R., Mor-Mur, FM (2001). Tecnología del procesado del pescado. Ed. Acribia. Zaragoza.
- Júarez, M; Olano, A.; Morais, F. (2005). Alimentos Funcionales. Editado por la Fundación Española para la Ciencia y la Tecnología.
- Mine, Y. (2008). Egg bioscience and biotechnology. 1ª ed. Ed. John Wiley & Sons Inc.. New Jersey (USA).
- Ordoñez Pereda, JA (2010). Tecnología de los alimentos. Síntesis, Madrid
- Preub, B. (1991). Fundamentos de la inspección de carnes. Acribia, Zaragoza
- Richardson, Ph. Ibarrz, A. 2004. Tecnologías Térmicas para el procesado de alimentos
- Rodríguez Somolinos, F (2011). Ingeniería de la industria alimentaria. Síntesis DL, Madrid
- Robinson, R. K., Wilbey, R. A. & Marcos Barrado, A. (2002). Fabricación de queso: R. Scott. Acribia, Zaragoza.
- Saunders, Londres Hui, Y.H., Guerrero Isabel, R. Rosmini, Marcelo. (2006). Ciencia y Tecnologías de las carnes. Ed. Limusa. Noriega editores
- Singh RP, Heldman DR (2009). Introducción a la ingeniería de los alimentos Acribia, Zaragoza.

Recommended websites:

- Web del Instituto de Salud Carlos III: www.isciii.es
- Web del Ministerio de Agricultura, Alimentación y Medio Ambiente: www.magrama.gob.es
- Web del Ministerio de Sanidad, Servicios Sociales e Igualdad: www.msc.es

- Web de la FAO: www.fao.org
- Web del IFT: Institute of Food Technology: http://www.ift.org/food-technology.aspx
- Web de ANICE: Asociación Nacional de Industrias de la Carne de España: http://www.anice.es/industrias
- Web de ANALAC: Asociación Nacional de Productores de Leche: http://www.analac.org
- Web de INPROVO: Asociación Interprofesional del huevo y sus productos: http://www.inprovo.com