

Course Unit	Food Technology	Field of study	Food Industries
Bachelor in	Dietetics and Nutrition	School	School of Health
Academic Year	2019/2020	Year of study	3
Type	Semestral	Semester	1
Level	1-3	ECTS credits	5.0
Code	8149-501-3205-00-19		
Workload (hours)	135	Contact hours	T - , TP 30 , PL - , TC 15 , S - , E - , OT 15 , O -

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Elsa Cristina Dantas Ramalhosa

#### Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Identify the main food technologies used in food industries;
2. Know the physical and chemical food parameters involved in food processing;
3. Understand the reactions where food components are involved.

#### Prerequisites

Before the course unit the learner is expected to be able to:

Apply knowledge and abilities acquired in Biochemistry, Food Chemistry and Nutrition.

#### Course contents

Identification of the main food characteristics with great importance in food processing. Knowledge on the modifications involved in food processing, in terms of chemical, sensorial and nutritional characteristics. Knowledge on the main food technologies, namely those involving: application or removal of heat; pH, atmosphere and water activity modification; emerging technologies; transformation operations. Examples.

#### Course contents (extended version)

1. Concept and Objectives of Food Technologies
  - Origin /evolution of food processing
  - Objectives of food technologies
2. Fresh goods
  - Alteration of fresh goods
  - Strategies on food conservation and transformation
  - Adulterated and contaminated foods
3. Heat treatments
  - Death kinetic of microorganisms by heat
  - Types of thermal treatments: Bleaching, Pasteurization and Sterilization
4. Treatments involving Cold
  - Refrigeration
  - Freezing
  - Defrosting
5. Preservation treatments involving pH, atmosphere and water activity modification
  - Influence of pH in microorganisms
  - Controlled and modified atmospheres
  - Dehydration: Drying and Lyophilization
6. New Technologies
  - Non-Ionizing Electromagnetic Radiations
  - Ionizing Electromagnetic Radiations
  - High Hydrostatic Pressures
7. Transformation Operations
  - Texture modification
  - Extrusion
8. Practical Applications

#### Recommended reading

1. Ordóñez J. A. (2005), Tecnologia de Alimentos, Artmed Editora, Porto Alegre (Brasil).
2. Singh R. P. and Heldman D. R. (2001), Introduction to Food Engineering, 3rd Ed. , Academic Press.
3. Fellows P. (1988), Food Processing Technology: Principles and Practice, Ellis Horwood Ltd. , Chichester (England).
4. Singh R. P. , Heldman D. R. (1993), Introduction to Food Engineering , 2ª Ed. , Academic Press, Inc. , San Diego.
5. Beitz H. D. , Grosch W. , Schieberle P. (2004), Food Chemistry, 3rd edition, Springer-Verlag.

#### Teaching and learning methods

Theoretical and Practical lessons - themes exposition by slides (data-show). Analysis of practical cases. Realization of experiments in the laboratory; Fieldwork - study visit to a food company; Tutorial guidance - help the students on problems resolution about the addressed matters.

#### Assessment methods

1. 1st Option - (Regular, Student Worker) (Final)
  - Intermediate Written Test - 80% (- Three tests along the semester.)
  - Practical Work - 20% (- Exercises and reports of the practical works; - Case study discussion.)
2. 2nd Option - (Regular, Student Worker) (Final, Supplementary, Special)
  - Final Written Exam - 80% (- Written final exam.)
  - Practical Work - 20% (- Exercises and reports of the practical works; - Case study discussion.)
3. 3rd Option - (Student Worker) (Final, Supplementary, Special)
  - Final Written Exam - 100% (- Written final exam.)

**Language of instruction**

Portuguese, with additional English support for foreign students.

**Electronic validation**

Elsa Cristina Dantas Ramalhosa	Ana Maria Geraledes Rodrigues Pereira	Antonio Jose Madeira Nogueira	Adília Maria Pires da Silva Fernandes
03-11-2019	19-11-2019	19-11-2019	19-11-2019