

Course Unit	Food Technology		Field of study	Biotechnology	
Bachelor in	Chemical Engineering		School	School of Technology and Management	
Academic Year	2022/2023	Year of study	3	Level	1-3
Type	Semestral	Semester	2	ECTS credits	6.0
Code	9125-755-3204-00-22				
Workload (hours)	162	Contact hours	T 30	TP -	PL 30
			TC -	S -	E -
			OT -	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) Paulo Miguel Pereira de Brito, Arantzazu Santamaria Echart

Learning outcomes and competences

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

1. Know that biotechnology has an important role in the food industries.
2. Know the common operations used on food engineering.
3. Know the principles and practices for the safe processing of foods.
4. Know how to plan the quality control of foodstuffs.

Prerequisites

Before the course unit the learner is expected to be able to:
Know basic notions of biology, chemistry and mathematics.

Course contents

Biotechnology in the food industries; Operations in Food Engineering; Principles and practices for the safe processing of foods; Quality control of foodstuffs.

Course contents (extended version)

1. Chapter 1. Biotechnology in the food industries
 - Different fermentations in dairy and food industries.
2. Chapter 2. Hygiene and food safety
 - Principles and practices used on the safe processing of foodstuffs.
 - Critical control points and HACCP planning.
3. Chapter 3. Operations on Food Engineering
 - Preliminary operations; conversion operations and preservation operations.
4. Chapter 4. Physical and chemical analysis
 - Fat content; sugar content and protein content of foodstuffs.
 - Amylose and amylopectin content in different starches.
 - Rheology of liquid foodstuffs.
 - Solid-liquid extraction.
 - Monitoring of a lactic fermentation.

Recommended reading

1. J. G. Brennan, J. R. Butters, N. D. Cowell, A. E. V. Lilley, Las Operaciones de la Ingeniería de los Alimentos, Editorial ACRIBIA S. A. , tercera edición, 1998.
2. R. P. Singh, D. R. Heldman, Introduction to Food Engineering, Academic Press, 2nd edition, 1993.
3. D. Pearson, The Chemical Analysis of Foods, Churchill, 6th edition, 1998.
4. D. A. Shapton, N. F. Shapton, Principles and Practices for the Safe Processing of Foods, Butterworth-Heinemann, 1991.
5. Legislação diversa. Normas Portuguesas e Normas ISO.

Teaching and learning methods

The presentation of the fundamental notions from each of the topics outlined in the programme, relating the theory with some practical examples, will be carried out in the theoretical-practical classes. The laboratorial protocols will be performed in the laboratory classes, and are assessed by written reports.

Assessment methods

- Alternative 1 - (Regular, Student Worker) (Final, Supplementary, Special)
 - Laboratory Work - 50% (The student has to carry out, necessarily, at least 80% of the experimental protocols.)
 - Final Written Exam - 25%
 - Presentations - 10%
 - Development Topics - 15%

Language of instruction

English

Electronic validation

Paulo Miguel Pereira de Brito	Hélder Teixeira Gomes	Ramiro José Espinheira Martins	José Carlos Rufino Amaro
28-02-2023	21-03-2023	21-03-2023	25-03-2023