

Course Unit	Food Technology			Field of study	Biotechnology	
Bachelor in	Chemical Engineering			School	School of Technology and Management	
Academic Year	2023/2024	Year of study	3	Level	1-3	ECTS credits 6.0
Туре	Semestral	Semester	2	Code	9125-755-3204-00-23	
Workload (hours)	162	Contact hours	T 30 TP T - Lectures; TP - Lectures a	- PL 30 T nd problem-solving; PL - Problem-	C - S - solving, project or laboratory; TC -	Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s)

Joana Andrea Soares Amaral, 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)

- Chapter 1. Biotechnology in the food industries

 Different fermentations in dairy and food industries.

 Chapter 2. Hygiene and food safety

 Principles and practices used on the safe processing of foodstuffs.
 Critical control points and HACCP planning.

 Chapter 3. Operations on Food Engineering

 Preliminary operations; conversion operations and preservation operations.

 Chapter 4. Physical and chemical analysis

 Fat content: sugar content and protein content of foodstuffs.

 - 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

- 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.
 R. P. Singh, D. R. Heldman, Introduction to Food Engineering, Academic Press, 2nd edition, 1993.
 D. Pearson, The Chemical Analysis of Foods, Churchill, 6th edition, 1998.
 D. A. Shapton, N. F. Shapton, Principles and Practices for the Safe Processing of Foods, Butterworth-Heinemann, 1991.
 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			
Joana Andrea Soares Amaral	Hélder Teixeira Gomes	António Manuel Esteves Ribeiro	José Carlos Rufino Amaro
08-03-2024	13-03-2024	13-03-2024	16-03-2024