

Course Unit	Microbiology and Food Security	Field of study	Food Industries
Bachelor in	Dietetics and Nutrition	School	School of Health
Academic Year	2019/2020	Year of study	1
Type	Semestral	Semester	2
Level	1-1	ECTS credits	5.0
Code	8149-501-1206-00-19		
Workload (hours)	135	Contact hours	T - TP 30 PL 30 TC - S - E - OT 6 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) Ermelinda Lopes Pereira

### Learning outcomes and competences

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

1. Know the factors that influence microbial growth in food
2. Identify and characterize the main etiologic agents of foodborne diseases
3. Ensure and control the microbiological quality of food.
4. Know the methods used in food analysis; Know how to interpret the analytical results.

### Prerequisites

Before the course unit the learner is expected to be able to:  
None

### Course contents

Factors responsible for growth and survival of microorganisms in the different foods. Microorganisms responsible for food deterioration. Processes of food preservation. Microorganisms responsible for foodborne diseases. Principles of food safety and quality control.

### Course contents (extended version)

1. Theoretical contents
  - Sources of microbial contamination of food. Factors affecting the microbial growth
  - Microbial spoilage of foods: meat, fish, seafood, dairy products, eggs and vegetables
  - Preservatives and methods of food preservation
  - Foodborne diseases: etiologic agent, pathogenesis, prevention and responsible practices
  - Food Fermentations
  - Indicator Microorganism and Microbiological Criteria
  - Food safety -Hazard Analysis Critical Control Points (HACCP).
2. Practical contents
  - Microbiological analysis of food: Sample collection and preparation for analysis
  - Methods for enumeration and identification: Total count; Indicator and pathogenic microorganisms.
  - Microbiological control of materials, surfaces and handlers

### Recommended reading

1. Forsythe SJ. (2010). The Microbiology of Safe Food, 2a Ed. Wiley-Blackwell
2. Roberts D, Hooper W & Greenwood M (2000). Microbiologia Prática de los Alimentos. Acirbia, Zaragoza, Espanha.
3. Forsythe SJ. (2013). Microbiologia da Segurança Alimentar. 2 ed. Porto Alegre. Artmed.
4. Novais, R. (2010). Microbiologia dos Alimentos. Pag. 522-549 in Ferreira, W. F. C., Sousa, J. C. F. & Lima, N. (coord. ). Microbiologia. Lidel-Edições técnicas, Lda. Lisboa. 622 páginas.

### Teaching and learning methods

Lectures using powerpoint presentations. Lectures notes deposited in the e-learning resources. Laboratory classes. Flipped classroom

### Assessment methods

1. Alternative 1 - (Regular, Student Worker) (Final)
  - Intermediate Written Test - 40%
  - Development Topics - 20%
  - Intermediate Written Test - 30%
  - Reports and Guides - 10%
2. Alternative 2 - (Regular, Student Worker) (Final, Supplementary, Special)
  - Final Written Exam - 100%

### Language of instruction

Portuguese

### Electronic validation

Ermelinda Lopes Pereira	Juliana Almeida de Souza	Antonio Jose Madeira Nogueira	Adília Maria Pires da Silva Fernandes
19-03-2020	30-03-2020	30-03-2020	30-03-2020