INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Industry and Food Innovation			Field of study	Food industries		
Bachelor in	Food Engineering			School	School of Agriculture		
Academic Year	2023/2024	Year of study	3	Level	1-3	ECTS credits	6.0
Type	Semestral	Semester	2	Code	9087-641-3201-00-23		

Workload (hours)	162	Contact hours	T -	TP -	PL -	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): António Manuel Coelho Lino Peres

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. To know the concepte and examples of new functional foods
2. To know different functions and principles of application of new food additives
3. To understand principles and concepts in development of innovative products in food industrie
4. To understand concepts, actors and stages in development of new food products
5. To know procedures relating to food quality and safety, technical specificationss and regulatory aspects of new products.
6. Apply the knowledge acquired at the various stages of innovation and the development of new food products.

Prerequisites

Before the course unit the learner is expected to be able to:
1. The students must have previous knowledge in the areas of general and alimentary microbiology,
2. The students must have previous knowledge in the areas of chemistry and toxicology of food.

Course contents

1. Innovation in the Food Industry 2. Functional Foods 3. New Additives and Formulations 4. Steps in the development of new food products 5. Quality Control 6. Shelf life determination 7. Case Study.

Course contents (extended version)

1. Innovation in the Food Industry
   - Worldwide food market
   - Characterization of new consumers
   - Market tendencies
   - The Portuguese and European food industry
   - Future Food -Legal Aspects
2. Functional Foods
   - Concept of functional food, functional and nutraceutical ingredient
   - Main classes of functional ingredients and their biological actions
   - Technological aspects
   - Functional food market
   - Legislation and claims
3. New Additives and Formulations
   - Principles of application
   - Food additives market, trends
4. Steps in the development of new food products
   - Definition of new product features and functionality
   - Consumer preferences, marketsegments
   - Benefits and risks
5. Quality Control
   - Physical, chemical and microbiological characterization
   - Sensory characterization
6. Shelf life determination.
7. Case Study
   - Ingredients / new food ingredients, nutraceuticals, new food packaging, etc

Recommended reading

1. Galanakis C M. 2016. Innovation strategies in the food industry: Tools for implemation. Elsevier.
2. Aramouni F, Deschenes K. 2015. Methods for developing new food products: An Instructional Guide. DEStech Publications, Inc.
3. Gordon W Fuller. 2011. New Food Product Development: From Concept to Marketplace, 3nd Edition. CRC Press.
4. Ruxton G D, Colgrave N. 2011. Experimental Design for the Life Sciences, 3nd Edition. Oxford University Press.
5. Brody A L, Lord J B. 2008. Developing New Food Products for a Changing Marketplace, 2nd Edition. CRC Press.

Teaching and learning methods

Teaching / learning methodology based on problem solving. Theoretical/ practical classes, expository method, where the theoretical concepts will be presented, developed and debated with the active participation of students. Practical classes where innovative food products will be developed, with experimental work on formulation and physicochemical, microbiological and sensorial characterization.

Assessment methods

- Evaluation - (Regular, Student Worker) (Final, Supplementary, Special)
  - Final Written Exam - 50% (All theoretical / practical component)
  - Experimental Work - 50% (Presentation and discussion of the written report on the development of an innovative food product)

Language of instruction

Portuguese

Electronic validation

António Manuel Coelho Lino Peres	Maria da Conceição Constantino Fernandes	Elsa Cristina Dantas Ramalhosa	José Carlos Batista Couto Barbosa
16-01-2024	16-01-2024	16-01-2024	17-01-2024