Course guide
390436 - DIALI - Food Design and Innovation

Last modified: 21/01/2026

Unit in charge: Barcelona School of Agri-Food and Biosystems Engineering
Teaching unit: 745 - DEAB - Department of Agri-Food Engineering and Biotechnology.

Degree: BACHELOR'S DEGREE IN FOOD ENGINEERING (Syllabus 2009). (Optional subject).

Academic year: 2025 **ECTS Credits:** 3.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: Achaerandio Puente, Maria Isabel

Others: Duran Cristobal, Eva

TEACHING METHODOLOGY

The teaching methodologies used in this course include participatory lectures that promote cooperative learning, as well as the development of practical skills.
During the participatory lectures, traditional lectures will alternate with active learning activities based on teaching materials prepared by the instructors and tasks developed by students during their autonomous learning time. Throughout the course, case studies will be implemented through guided activities, active learning tasks (such as peer assessment and debates), student oral presentations, and visits to food companies to gain insight into their production systems and/or their approaches to innovation.

LEARNING OBJECTIVES OF THE SUBJECT

Upon completion of the course Food Design and Innovation, students will be able to:
1. Understand the fundamentals of Innovation in Industry and the related methodologies.
2. Identify and evaluate the application of new trends and ingredients used in the food industry.
3. Apply the current regulations governing the field of food formulation.
4. Gain an introduction to the formulation of new food products.
5. Design evaluation tests for new food products.

STUDY LOAD

Type	Hours	Percentage
Self study	90,0	75.00
Laboratory classes	10,0	8.33
Practical classes	20,0	16.67

Total learning time: 120 h

CONTENTS

Development of the design of new food products

Description:
Concepts of food innovation
Sources of innovation
Global and specific food trends
How innovation is carried out in a company. Concepts of strategy, mission, and vision
The Blue Ocean Strategy
Innovation sessions
Fundamentals of inbound and outbound marketing. The buyer persona
The innovation funnel

Full-or-part-time: 50h
Theory classes: 20h
Self study : 30h

New ingredients, formulation and labelling

Description:
Customized foods for specific groups: allergens, functional foods, organic, GMOs
Novel Foods
Vitamins and minerals
Alternatives to animal protein
Probiotics, prebiotics, and symbiotic
Dietary fiber
Stages of food product design
Basics of formulation
Composition and calculation of the nutritional composition of foods
Major additives
Product labelling. Legislative framework and claims
Other legislation required for product launch

Related activities:
Activity 1: Participatory lecture sessions
Activity 2: Visits to food companies to learn about their production systems and their approach to innovation
Activity 3: Laboratory practices and problem-solving exercises in product innovation
Activity 4: Innovation study of a new food product through to its design

Full-or-part-time: 25h
Practical classes: 10h
Self study : 15h

GRADING SYSTEM

Grading
NFinal=Final grade
N1: individual exam grade
N2: seminars grade
N3:Class activities and quizzes (individual and group tasks)
N4: Report and oral presentation
NFinal= 0.35N1 + 0.15N2 + 0.15N3 + 0.35N4

EXAMINATION RULES.

Students will receive a calendar outlining the schedule of activities and submission deadlines

BIBLIOGRAPHY

Complementary:

- Cortés, Claudia. Modificando la textura de los alimentos : manual de uso de los hidrocoloides . [Madrid] : Vivelibro , DL 2016. ISBN 9788416875498.
- Burdock, George A; Fenaroli, Giovanni. Fenaroli's handbook of flavor ingredients . 6th ed. Boca Raton, FL : CRC Press , cop. 2010. ISBN 9781420090772.
- Chadwick, Ruth F. Functional foods . Berlin [etc.] : Springer, cop. 2003. ISBN 3540201203.
- Jongen, W. M. F; Meulenberg, M. T. G. Innovation of food production systems : product quality and consumer acceptance . Wageningen : Wageningen Pers, 1998. ISBN 9074134513.
- Gaonkar, Anilkumar G; McPherson, Andrew. Ingredient interactions : effects on food quality . 2nd ed. New York [etc.] : CRC, cop. 2006. ISBN 0824757483.
- Watson, Ronald R. Complementary and alternative therapies in the aging population [Recurs electrònic] . Amsterdam ; Boston : Academic Press/Elsevier, cop. 2009. ISBN 9780080921242.
- Smith, Jim; Charter, Edward. Functional food product development . Chichester, West Sussex ; Ames, Iowa : Blackwell, 2010. ISBN 9781405178761.