Course guide
390323 - IEF - Extraction and Fermentation Industries

Last modified: 19/06/2024

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). (Compulsory subject).

Academic year: 2024 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Elena Sánchez

Others: Elena Sánchez

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. Food engineering and technology: Food technology.
2. Food engineering and technology: Processes in food industry.
3. Food engineering and technology: Modeling and optimization.

TEACHING METHODOLOGY

Autonomous learning, students work outside the classroom part of the contents of the course with material for self-learning.
Directed learning, combine participatory lectures with lab-pilot plant sessions, visits to food industries and group work of a practical case study. Some learning activities are carried out cooperative work in small groups of students. Different activities will be evaluated on an ongoing basis; the use of the ATENEA virtual forum will be encouraged.

LEARNING OBJECTIVES OF THE SUBJECT

At the end of the course, the student should be able to:
· Describe the stages of the productive process of extraction and processed of raw materials (musts, flour, oil and fat).
· Describe the production of food products from the extractive and fermentation industries: ingredients, formulation, product development and technological processes from the raw material to the final product.
· Propose control parameters to minimize production losses and obtain a quality product that complies with current legislation and respects environmental and social aspects.

STUDY LOAD

Type	Hours	Percentage
Hours small group	20,0	13.33
Hours large group	40,0	26.67
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

FERMENTED BEVERAGES. WINE AND BEER

Description:
Major industries of fermented beverages. Brewing industry. Types of beer. Obtaining malt beer and brewing. Wine industry. Operations common to different types of winemaking. Production of white, rosé and red wines. Production of sparkling wine.

Related activities:
Activity 1. Classroom activities
Activity 2. Individual exam
Activity 3. Laboratory work and pilot plant
Activity 4. Visits to Food industries

Full-or-part-time: 75h 25m
Theory classes: 20h 25m
Laboratory classes: 10h
Self study : 45h

FOOD OILS AND FATS

Description:
Sort of oils and fats for food use. Olive oil. Other vegetable oils and animal.
Extraction of crude oils and fats. Refining and processing (fractionation, hydrogenation and interesterification).
Applications of oils in the food industry. Selection criteria of an oil or fat.

Related activities:
Activity 1. Classroom activities
Activity 2. Individual exam
Activity 3. Laboratory work and pilot plant
Activity 4. Visit a Food industry

Full-or-part-time: 37h 42m
Theory classes: 10h 12m
Laboratory classes: 5h
Self study : 22h 30m

CEREALS PRODUCTS

Description:
Wheat flour production process. Flour components and functionality in bread. Quality control and classification of flour.

Related activities:
Activity 1. Classroom activities
Activity 2. Individual exam
Activity 3. Laboratory work and pilot plant
Activity 4. Visit a Food industry

Full-or-part-time: 37h 43m
Theory classes: 10h 13m
Laboratory classes: 5h
Self study : 22h 30m

ACTIVITIES

ACTIVITY 1: CLASSROOM ACTIVITIES

Full-or-part-time: 98h
Self study: 60h
Theory classes: 38h

ACTIVITY 2: INDIVIDUAL EXAM

Full-or-part-time: 2h
Theory classes: 2h

ACTIVITY 3: LABORATORY WORK AND PILOT PLANT

Full-or-part-time: 42h
Self study: 28h
Laboratory classes: 14h

ACTIVITY 4: VISIT A FOOD INDUSTRY

Full-or-part-time: 8h
Self study: 2h
Laboratory classes: 6h

GRADING SYSTEM

The final grade of the course, Nfinal is the sum of the following partial qualifications:
Nfinal= 0,5 N1 + 0,5 N2

N1 (partial content 1) = 70% theory exam + 25% attendance and practices + 5% attendance field trip
N2 (partial content 2) = 70% theory exam + 25% attendance and practices + 5% attendance field trip

BIBLIOGRAPHY

Basic:
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- Adrian, A. La panificación: aspectos socioeconómicos, materias primas, agentes de fermentación, tecnología y calidad. Barcelona: Montagud, 1996. ISBN 8472120635.
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- Hidalgo Togores, José. Tratado de enología (volum 2) [on line]. 2a. edición revisada y ampliada. Madrid: Mundi-Prensa, 2011 [Consultation: 22/12/2022]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=4435210. ISBN 9781512946390.
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