Course guide
390323 - IEF - Extractions and Fermentation Industries

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: 2022 ECTS Credits: 6.0 Languages: Catalan, Spanish

LECTURER
Coordinating lecturer: Isabel Achaerandio
Others: Elena Sanchez, Amèlia Sarroca

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUITS
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

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours small group</td>
<td>20.0</td>
<td>13.33</td>
</tr>
<tr>
<td>Hours large group</td>
<td>40.0</td>
<td>26.67</td>
</tr>
<tr>
<td>Self study</td>
<td>90.0</td>
<td>60.00</td>
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</tbody>
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Total learning time: 150 h
## FERMENTED BEVERAGES. WINE AND BEER

**Description:**

**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
  - Theory classes: 38h
  - Self study: 60h

## ACTIVITY 2: INDIVIDUAL EXAM

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

## ACTIVITY 3: LABORATORY WORK AND PILOT PLANT

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

## ACTIVITY 4: VISIT A FOOD INDUSTRY

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

# GRADING SYSTEM

The final grade of the course, $N_{\text{final}}$, is the sum of the following partial qualifications:

$$N_{\text{final}} = 0.45 N_1 + 0.45 N_2 + 0.1 \text{ (participation)}$$

- $N_1$ (1 content) = 100% individual exam
- $N_2$ (contents 2 and 3) = 70% individual exam + 30% tasks
BIBLIOGRAPHY

Basic: