

## **Syllabus Information**

---

**Academic Year:** 2022/23

**Subject:** 66227 -

**Faculty / School:** 110 - Escuela de Ingeniería y Arquitectura

**Degree:** 531 - Master's in Chemical Engineering

**ECTS:** 3.0

**Year:** 2

**Semester:** First semester

**Subject Type:** Optional

**Module:**

### **1. General information**

### **2. Learning goals**

### **3. Assessment (1st and 2nd call)**

## **4. Methodology, learning tasks, syllabus and resources**

### **4.1. Methodological overview**

The learning method used in this course is based on the cooperative work of the teacher and the student. The method will follow the traditional approach based on lectures but supported by the active participation of the students. Therefore, participation and discussion during the lectures will be promoted. The learning process will be developed in several levels:

- Lectures, to provide students with the concepts and principles of engineering along with their applications to food handling and processing. The lectures are designed to understand the importance of engineering principles in food industry. This course is designed to teach fundamental principles for the various operations in food engineering that the student needs to learn in order to perform effectively as a Food Scientist and Food Engineer.
- Problem solving, case studies and visits to food processing companies. These three activities are useful to support the theoretical contents presented during lecturing because these enable the learning and also help students to develop a more applied knowledge of the matter.

### **4.2. Learning tasks**

The course (75 hours) includes the following learning tasks:

- Lectures (20 h).
- Problem and case discussion (5 h)
- Autonomous work, study, and guided activities (42h).
- Special practice session: Visit to a food processing company (5h).
- Ongoing assessment (3h).

Lectures and problem/case discussion will be held according to the course schedule available at the EINA website.

### **4.3. Syllabus**

The course will address the following topics:

Topic 1. Food Processing Industry. Unit operations. Environmental issues and best available techniques.

Topic 2. Oil and fat processing: Classification of oils according to the normative; commercial types of olive oils; olive oil extraction operations, byproducts in olive oil processing.

Topic 3. Fruit and Vegetables; Fruit juice processing technology; Canning operations on fruits and vegetables; Fruits and vegetable drying/dehydration; Processing of jam and jellies preparation methods of nectar, concentrate and syrup.

Topic 4. Alcoholic beverages processing: Beer; Types of beer; Technology of brewing process; Raw materials for the beer manufacture, Side products in beer processing industry.

Topic 5. Sugar Industry and Sugar Manufacturing Process. Sugar classification; Unit operations relevant to the sugar manufacturing process.

Topic 6. Milk and Dairy Ingredients for Food Processing. Thermal processing; pasteurization; aseptic packaging, cream, cheese, yogurt, ice-creams, butter, milk powder.

Topic 7. Advanced Processes in the Food industry.

#### **4.4. Course planning and calendar**

Further information concerning the timetable, classroom, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the Master's website and the EINA website <https://eina.unizar.es/>

Activities calendar and teaching materials will be posted on the virtual platform Moodle (<https://moodle.unizar.es/>)

This course is designed for 3 ECTS credits, that implies the student should be involved with this course for at least 75 hours ,as follows:

- 20 hours of lectures
- 5 hours of problem and case discussion.
- 42 hours Autonomous work, study, and guided activities .
- 5 hours for a special practice session: Visit to a food processing company.
- 3 hours of ongoing assessment.

#### **4.5. Bibliography and recommended resources**

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=66227>