

## FOOD TECHNOLOGY I

MODULE	CONTENT	YEAR	TERM	CREDITS	TYPE
Food Technology	Basics of Food Technology	3º	1º	6	Compulsory
<b>LECTURER(S)</b>			<b>Postal address, telephone nº, e-mail address</b>		
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<b>DEGREE WITHIN WHICH THE SUBJECT IS TAUGHT</b>					
Degree in Food Science and Technology					
<b>PREREQUISITES and/or RECOMMENDATIONS (if necessary)</b>					
Students should have passed the following subjects: Basics of Food Engineering and Unit Operations in the Food Industry.					
<b>BRIEF ACCOUNT OF THE SUBJECT PROGRAMME (ACCORDING TO THE DEGREE ¿??)</b>					
Thermal processing. Low temperature technology for preservation. Freezing. Preservation by dehydration. Packaging.					
<b>GENERAL AND PARTICULAR ABILITIES</b>					
<b>OBJECTIVES (EXPRESSED IN TERMS OF EXPECTED RESULTS OF THE TEACHING PROGRAMME)</b>					
<ul style="list-style-type: none"> <li>○ Select variables of heat treatment necessary for microbial thermal inactivation.</li> <li>○ Identify alternative sterilization technologies such as irradiation, high-pressure processing and pulsed electric field processing</li> <li>○ Calculate refrigeration systems, including mechanical refrigeration cycle.</li> </ul>					



- Design preservation systems by reducing the water activity such as drying, freeze-drying and evaporation.
- Describe materials and types of packaging suitable for various foods.

## **DETAILED SUBJECT SYLLABUS**

### **THEORETICAL TOPICS:**

#### **1. Thermal processing**

Kinetics of microbial inactivation. Heat processing methods: pasteurization, blanching and sterilization.

#### **2. Low temperature technologies for preservation**

Irradiation. High-pressure processing. Pulsed electric field.

#### **3. Freezing**

Low temperature production: mechanical refrigeration cycle, enthalpy diagram, refrigerants. Refrigeration: heat transfer under unsteady state, calculations of common terms used in refrigeration system design.

Freezing: freezing curve, freezing kinetics.

#### **4. Dehydration**

Psychrometry. Water activity. Drying: in heated air, by direct contact with a heated surface, equipments.

Freeze-drying: time, equipments. Evaporation: single-effect, multiple-effects, equipments.

#### **5. Packaging**

Materials used for packaging foods. Aseptic packaging. Vacuum packaging. Modified atmosphere packaging. Active packaging. Intelligent packaging.

### **PRACTICES:**

Laboratory Practices

Computer Practices

### **READING**

- Rodríguez F. y cols. Ingeniería de la Industria Alimentaria. Vol. III. Operaciones de conservación de alimentos. Ed. Síntesis, 2002.
- Ordóñez J.A. y cols. Tecnología de los Alimentos. Vol I. Componentes de los alimentos y procesos. Ed. Síntesis, 1998.
- Ibarz A. y Barbosa-Canovas G. Unit Operations in Food Engineering. Ed. CRC, 2002.
- Brenan J.G. y cols. Food Processing Handbook. Ed. Wiley, 2006.

### **RECOMMENDED INTERNET LINKS**

