## SUBJECT GUIDE

### UNIT OPERATIONS IN FOOD INDUSTRY

**Academic year 2019-2020**

Date last updated: 22/05/2019

Date of approval in Department Council: 22/05/2019

<table>
<thead>
<tr>
<th>MODULE</th>
<th>CONTENT</th>
<th>YEAR</th>
<th>TERM</th>
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<tbody>
<tr>
<td>Food Technology</td>
<td>Basics of Food Technology</td>
<td>2º</td>
<td>1º</td>
<td>6</td>
<td>Compulsory</td>
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<tr>
<th>LECTURER(S)</th>
<th>Postal address, telephone nº, e-mail address</th>
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<tbody>
<tr>
<td>• Antonio Raúl Pérez Gálvez</td>
<td>Dpto. Ingeniería Química, 2ª planta, Facultad de Ciencias. Despacho nº4. email: <a href="mailto:rperezga@ugr.es">rperezga@ugr.es</a></td>
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### DEGREE WITHIN WHICH THE SUBJECT IS TAUGHT

Degree in Food Science and Technology

### PREREQUISITES and/or RECOMMENDATIONS (if necessary)

Students should have passed the following subject: Basics of Food Engineering

### BRIEF ACCOUNT OF THE SUBJECT PROGRAMME (ACCORDING TO THE DEGREE ???)


### GENERAL AND PARTICULAR ABILITIES

### OBJECTIVES (EXPRESSED IN TERMS OF EXPECTED RESULTS OF THE TEACHING PROGRAMME)
Identify types of fluids from a rheological point of view and the rheological measures necessary.

Resolve fluid flow systems employing conservation equations in different flow regimes.

Calculate heat transfer systems, including heat exchangers, considering the mechanisms involved.

Design, from mass transfer mechanisms, distillation and solid-liquid extraction operations.

**DETAILED SUBJECT SYLLABUS**

**THEORETICAL TOPICS:**

1. **Rheology**
   Rheological classification of fluids: newtonian fluids, non-newtonian fluids. Variables which influence on the rheological parameters. Rheological measures: rotational viscometers, tube viscometers.

2. **Fluids flow**

3. **Heat transfer**

4. **Mass transfer**
   Mass transfer mechanisms: diffusion, convection. Distillation: liquid-vapor equilibrium, simple distillation, rectification. Solid-liquid extraction: extraction equilibrium, single-stage extraction, multistage extraction.

**PRACTICES:**

Laboratory Practices

**READING**


**RECOMMENDED INTERNET LINKS**