240641 - Food Bioengineering

Coordinating unit: 240 - ETSEIB - Barcelona School of Industrial Engineering
Teaching unit: 713 - EQ - Department of Chemical Engineering
Academic year: 2018
Degree: BACHELOR’S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Optional)
BACHELOR’S DEGREE IN MATERIALS ENGINEERING (Syllabus 2010). (Teaching unit Optional)
BACHELOR’S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2010). (Teaching unit Optional)
ECTS credits: 3
Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: María Pilar Almajano
Others: María Pilar Almajano
Carmen Pretel
Lourdes Urpí

Opening hours
Timetable: By appointment via email

Degree competences to which the subject contributes

Transversal:
06 URI. EFFECTIVE USE OF INFORMATION RESOURCES. Managing the acquisition, structure, analysis and display of information from the own field of specialization. Taking a critical stance with regard to the results obtained.

Teaching methodology

There will be 27 contact hours of classroom lecture with active methodologies two hours dedicated to practice and are allocated one hour to visit. In non-contact hours delivered documents will be scheduled through Athena

Learning objectives of the subject

1. Differentiate the components of foods, their basic characteristics and the contribution of each component to the nutritional properties of the food
2. Justifiably the need (or not) of food additives
3. Explain the major alteration reactions that may occur in food processing machines and design to minimize
4. Determine the parameters influencing good control of the specific characteristics that determine food processing, distribution and industrial preparation
5. Implement the relevant food handling
6. Working with basic regulatory and legal framework applicable to the processing, distribution and preparation of food, especially food additives, packaging and labeling.
7. Designing biofermentors for obtaining food
8. Applying the theoretical framework, new technologies of food irradiation
9. Taking decisions on the implementation of quality standards for the food industry.
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## Study load

<table>
<thead>
<tr>
<th>Time Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total learning time</td>
<td>75h</td>
<td>100.00%</td>
</tr>
<tr>
<td>Hours large group</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>30h</td>
<td>40.00%</td>
</tr>
<tr>
<td>Hours small group</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td>Guided activities</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td>Self study</td>
<td>45h</td>
<td>60.00%</td>
</tr>
</tbody>
</table>
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### Content

<table>
<thead>
<tr>
<th>Topic</th>
<th>Learning time:</th>
<th>Description:</th>
<th>Related activities:</th>
</tr>
</thead>
</table>
| **Biomolecules**             | 9h             | Theory classes: 2h  
Laboratory classes: 2h  
Guided activities: 1h  
Self study: 4h                                                                 | Lab practice         |
| **Reactions in food**        | 10h            | Theory classes: 3h  
Guided activities: 3h  
Self study: 4h                                                                 | Discussion           |
| **Additives**                | 8h             | Theory classes: 2h  
Practical classes: 1h  
Guided activities: 1h  
Self study: 4h                                                                 | Discussion           |
| **Quality and hygiene**      | 8h             | Theory classes: 3h  
Guided activities: 1h  
Self study: 4h                                                                 | Lab practice         |

- **Reactions in food**: Main reactions occurring in food processing. Importance in its development
- **Additives**: Food Additives. Rating, Law and use
- **Quality and hygiene**: Quality and hygiene in the food industry. HACCP system. Product testing and installations
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## Planning of activities

<table>
<thead>
<tr>
<th>Visit a food factory</th>
<th>Hours: 3h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 3h</td>
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</tbody>
</table>

## Qualification system

- Classroom Activities 25%
- Teamwork 25%
- Theory test 35%
- Practices: 15%

### Biotechnology. GM food

**Description:**
Biotechnology. GM food

**Learning time:** 6h
- Theory classes: 2h
- Guided activities: 1h
- Self study: 3h

### Fermenters

**Description:**
Fermenters. Industrial fermentation facilities. Characteristics, patterns and sizing. Training

**Learning time:** 8h
- Theory classes: 3h
- Guided activities: 1h
- Self study: 4h

### Food treatments

**Description:**
- Treatments for energy supply
- Thermal pasteurization and sterilization
- Irradiation
- Emerging Technologies

**Learning time:** 14h
- Theory classes: 4h
- Practical classes: 1h
- Guided activities: 3h
- Self study: 6h
Bibliography

Basic:


Others resources:

Audiovisual material
Nom recurs
Resource