240EQ332 - Bioplastics and Polymer Biomaterials

Coordinating unit: 295 - EEBE - Barcelona East School of Engineering
Teaching unit: 713 - E - Department of Chemical Engineering
Academic year: 2018
Degree: MASTER'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2012). (Teaching unit Optional)
MASTER'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2012). (Teaching unit Optional)
ECTS credits: 4,5
Teaching languages: English

Teaching staff

Coordinator: CARLOS ENRIQUE ALEMAN LLANOSO
Others: Primer quadrimestre:
CARLOS ENRIQUE ALEMAN LLANOSO - 10, 20
SEBASTIAN MUÑOZ GUERRA - 10
RAFAEL ALFONSO RODRIGUEZ GALAN - 10, 20

Opening hours

Timetable: To agree with the teachers

Degree competences to which the subject contributes

Specific:
CEMQ1. Apply knowledge of mathematics, physics, chemistry, biology and other natural sciences, obtained through study, experience, and practice, critical reasoning to establish economically viable solutions to technical problems.

CEMQ9. Manage the Research, Development and Technological Innovation, based on the transfer of technology and property rights and patents.
CEMQ13. Organization, presentation and defense, now that all the credits of the curriculum, an original exercise performed individually before a university tribunal, consisting of a comprehensive project of Chemical Engineering professional nature which synthesize skills acquired in teachings.

General:
CGMQ4. Conduct proper research, undertake design and lead the development of engineering solutions in new or unfamiliar environments, linking creativity, originality, innovation and technology transfer.
CGMQ6. Ability to analyze and synthesize to the continued progress of products, processes, systems and services using criteria of safety, affordability, quality and environmental management.
CGMQ11. Possess independent learning skills to maintain and enhance the competencies of chemical engineering to enable the continued development of their profession.

Transversal:
CT3. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.

Teaching methodology

Lectures and presentation of works
Learning objectives of the subject

Learn the basic knowledge about bioplastics and polymeric biomaterials. Gain theoretical understanding and design allowing bioplastics and polymeric biomaterials. Learning to reason about relations structure - properties. Learn reasoning schemes that apply in the field of research in bioplastics and polymeric biomaterials.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 112h 30m</th>
<th>Hours large group: 0h 0.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 0h 0.00%</td>
</tr>
<tr>
<td></td>
<td>Hours small group: 40h 30m 36.00%</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 0h 0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study: 72h 64.00%</td>
</tr>
</tbody>
</table>
## Content

### 1. Biosustainability and biodegradability

**Learning time:** 6h  
**Theory classes:** 6h

**Description:**  

### 2. Sustainable monomers

**Learning time:** 4h  
**Theory classes:** 4h  
**Practical classes:** 0h

**Description:**  

### 3. Polymers and sustainable bioplastics

**Learning time:** 6h  
**Theory classes:** 6h

**Description:**  

### 4. Nanostructured Polymers and copolymers

**Learning time:** 4h  
**Theory classes:** 4h

**Description:**  

### 5. Biomaterials and living systems

**Learning time:** 5h  
**Theory classes:** 5h

**Description:**  
### 6. Polymeric biomaterials

**Learning time:** 7h  
Theory classes: 7h

**Description:**  

### 7. Advanced bioplastics

**Learning time:** 6h  
Theory classes: 6h

**Description:**  

### 8. Bioplastics based on peptides and polypeptides

**Learning time:** 6h  
Theory classes: 6h

**Description:**  

### Qualification system

\[ NC = \frac{(NP1+NP2+NP3)}{3}\]

Where NC is the course mark and NP1-NP3 are the marks of the three parts in which the subject is divided.

### Regulations for carrying out activities

Examination: it consists of several theoretical and practical questions related with the topics explained along the course.

### Bibliography

**Basic:**