Course guide
240657 - 240657 - Industrial Equipment and Facilities

Unit in charge: Barcelona School of Industrial Engineering
Teaching unit: 713 - EQ - Department of Chemical Engineering.

Degree: BACHELOR’S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Optional subject).

Academic year: 2023  ECTS Credits: 6.0  Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: Jose Ignacio Iribarren Laco
Others: Jose Ignacio Iribarren Laco

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CE4. Capacity to understand and apply basic knowledge principles of general chemistry, organic and inorganic chemistry and their engineering applications.

TEACHING METHODOLOGY

Learning based in expositive lessons by using the resources available in Atenea campus and cooperative learning in practice sessions oriented to exercices resolution.

LEARNING OBJECTIVES OF THE SUBJECT

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Hours medium group</td>
<td>60,0</td>
<td>40.00</td>
</tr>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
</tr>
</tbody>
</table>

Total learning time: 150 h

CONTENTS

Introduction. Chemical industry characteristics.

Description:
General characteristics of chemical industry. Equipment and general installations. Associated problematic to the chemical plant.

Specific objectives:
Knowledge of the general characteristics of a chemical industry.

Full-or-part-time: 3h
Theory classes: 2h
Self study : 1h
Thermodynamic basis of the corrosion.

**Description:**

**Specific objectives:**
To obtain the thermodynamic basis of corrosion and apply the Pourbaix diagrams to predict the possibility of corrosion.

**Related activities:**
Exercises session.

**Full-or-part-time:** 8h
Theory classes: 4h  
Practical classes: 2h  
Self study: 2h

Corrosion kinetics.

**Description:**

**Specific objectives:**
To obtain the kinetics implications in corrosion processes and apply to different factors afectting to corrosion rate.

**Related activities:**
Exercise session.

**Full-or-part-time:** 7h
Theory classes: 3h  
Practical classes: 2h  
Self study: 2h

Types of corrosion. Protection against corrosion.

**Description:**

**Specific objectives:**
To distinguish the differents types of corrosion related with the morphology and properties of metals and alloys.

**Related activities:**
Exercise session. Team work and visit to Galvanizados Tenas.

**Full-or-part-time:** 6h
Theory classes: 2h  
Practical classes: 2h  
Self study: 2h
Materials properties.

Description:

Specific objectives:
To study the main properties of materials which can be used in chemical industry.

Related activities:
Exercise session.

Full-or-part-time: 6h
Theory classes: 2h
Practical classes: 2h
Self study : 2h

Materials selection.

Description:
Materials selection criteria. Application to apparatus and equipment of chemical industry.

Specific objectives:
To establish the basis of materials selection criteria in chemical industry.

Related activities:
Exercise session.

Full-or-part-time: 6h
Theory classes: 2h
Practical classes: 2h
Self study : 2h

Costing and project evaluation.

Description:

Specific objectives:
To study preliminarily the investment analysis and associated costing in chemical industry.

Related activities:
Exercise session.

Full-or-part-time: 6h
Theory classes: 2h
Practical classes: 2h
Self study : 2h
**Mechanical design.**

**Description:**

**Specific objectives:**
To study the basis of mechanical design of vessels under pressure and storage tanks.

**Related activities:**
Exercise session.

**Full-or-part-time:** 6h
- Theory classes: 2h
- Practical classes: 2h
- Self study: 2h

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**GRADING SYSTEM**

Evaluation system includes:
- a) Exercises resolution in continuous evaluation (25% of final qualification)
- b) Complementary activities like to seminars, expositions and guided works (25% of final qualification).
- c) Two examinations (50% of final qualification).

Reevaluation will replace the qualification of final examen, remaining unchanged the continuous evaluation.

During the period of spring of the course 2019-2020, and as a consequence of the health crisis due to the Covid19, the qualification methodology will be:
- Continuous evaluation based on deliveries of exercises of the first part of the subject, being the weight a 65% in the final qualification.
- Continuous evaluation based on deliveries of exercises of the second part of the subject, being the weight a 35% in the final qualification.

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**EXAMINATION RULES.**

Additional material is allowed in examination in accordance with the criteria of the professor.

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**BIBLIOGRAPHY**

**Basic:**