# 820444 - TCIIM - Building Technology and Industrial Facilities

**Coordinating unit:** 295 - EEBE - Barcelona East School of Engineering  
**Teaching unit:** 737 - RMEE - Department of Strength of Materials and Structural Engineering  
**Academic year:** 2017  
**Degree:**  
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
BACHELOR'S DEGREE IN MATERIALS ENGINEERING (Syllabus 2010). (Teaching unit Optional)  
**ECTS credits:** 6  
**Teaching languages:** Catalan

## Teaching staff

**Coordinator:** ALBERTO ZAMORA BORDES  
**Others:** ALBERTO ZAMORA BORDES

## Prior skills

Use of CAD programs.  
Use of office applications (Word and Excel).

## Requirements

Fluid Mechanics.  
Electrical Systems.

## Degree competences to which the subject contributes

### Transversal:

1. **SELF-DIRECTED LEARNING** - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.  
2. **TEAMWORK** - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.  
3. **EFFECTIVE USE OF INFORMATION RESOURCES** - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.

## Teaching methodology

Methodology applied consists in theoretical exposition and problem solving in large groups, and use of tools for problem solving in the field of Building Constructions and Installations at Practice groups.  

Using knowledges and tools acquired during the sessions will be taken as the basis for the Non-presential work. (40%).

Directed activities related to each item will establish guidelines for non-presential work.

## Learning objectives of the subject

1. Acquire knowledge in the field of engineering projects aimed at buildings and industrial facilities.  
2. Acquire ability to manage specifications, regulations and mandatory standards.  
3. Representing simple industrial processes.  
4. Distinguish constraints involved in industrial buildings.  
5. Designing industrial buildings and establishing location of industrial plants.
6 - Analyze and design elements of basic industrial facilities.
7 - Establish construction systems involved in industrial building.
8 - Design Implementation alternatives.
9 - Distinguish between different instruments of urban planning and its functions.
10 - Select the most appropriate structural system in industrial building.
11 - Select the most appropriate building systems in industrial building.
12 - Analyze and assess the environmental impact of proposed solutions.

**Study load**

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group:</th>
<th>30h</th>
<th>20.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group:</td>
<td>0h</td>
<td>0.00%</td>
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<tr>
<td></td>
<td>Hours small group:</td>
<td>30h</td>
<td>20.00%</td>
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<tr>
<td></td>
<td>Guided activities:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study:</td>
<td>90h</td>
<td>60.00%</td>
</tr>
</tbody>
</table>
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## Content

<table>
<thead>
<tr>
<th>Section</th>
<th>Learning time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Introduction to industrial building and facilities projects.</strong></td>
<td>6h</td>
<td><strong>Description:</strong> Introduction to projects redaction. Parts project. Minimum content. Applying rules. Appendices and complementary documentation. Guidelines for quality management in projects.</td>
</tr>
<tr>
<td><strong>3. Relation between architecture and industry.</strong></td>
<td>9h</td>
<td><strong>Description:</strong> Function and objectives of architecture. General Introduction to architectural design. Industrial architecture: characteristics and solutions. Type structural in industrial building: evolution since classic times to nowadays. Sizing of spaces: modular construction.</td>
</tr>
</tbody>
</table>
### 5. Plant layout: Systematic Layout Planning

**Learning time:** 7h  
Theory classes: 2h  
Self study: 5h

**Description:**  
Definition of industrial process: process diagram. List of activities and operating conditions. Distribution in space.  

### 6. Auxiliary services in manufacturing processes

**Learning time:** 28h  
Theory classes: 9h  
Practical classes: 5h  
Self study: 14h

**Description:**  

### 7. Essential characteristics in industrial building.

**Learning time:** 16h  
Theory classes: 4h  
Practical classes: 2h  
Self study: 10h

**Description:**  

### 8. Basics of industrial location.

**Learning time:** 7h  
Theory classes: 2h  
Self study: 5h

**Description:**  
### 9. Introduction to soil planning

<table>
<thead>
<tr>
<th>Learning time:</th>
<th>7h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes:</td>
<td>2h</td>
</tr>
<tr>
<td>Self study:</td>
<td>5h</td>
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</tbody>
</table>

**Description:**
Purpose of soil planning, Soil planning and land classification, Basic urban services, Urban systems, Land use, General planning, Special Plans.

### 10. Introduction to industrial soil planning.

<table>
<thead>
<tr>
<th>Learning time:</th>
<th>7h</th>
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</thead>
<tbody>
<tr>
<td>Theory classes:</td>
<td>2h</td>
</tr>
<tr>
<td>Self study:</td>
<td>5h</td>
</tr>
</tbody>
</table>

**Description:**
Planning for industrial land. Current trends in industrial soil planning, Characteristics of great industrial areas, Location of activities.

### 11. Systems and subsystems in building.

<table>
<thead>
<tr>
<th>Learning time:</th>
<th>29h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes:</td>
<td>10h</td>
</tr>
<tr>
<td>Practical classes:</td>
<td>4h</td>
</tr>
<tr>
<td>Self study:</td>
<td>15h</td>
</tr>
</tbody>
</table>

**Description:**
Building systems and subsystems, Basic conditions, Structural system, Envelope system, System of compartmentalization and sectorization, Conditioning system and facilities, System finishes.

### 12. Environment and industry.

<table>
<thead>
<tr>
<th>Learning time:</th>
<th>15h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes:</td>
<td>4h</td>
</tr>
<tr>
<td>Practical classes:</td>
<td>2h</td>
</tr>
<tr>
<td>Self study:</td>
<td>9h</td>
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</table>

**Description:**
Non-presential work 40%
Final exam 35%
Practices 15%
Generic competencies 10%

Regulations for carrying out activities
To carry out the exams is allowed the use of any documentation.

Bibliography

Basic:

Others resources:
Information downloaded from ATENEA