Course guide
240EI026 - 240EI026 - Constructions and Industrial Architecture

Unit in charge: Barcelona School of Industrial Engineering
Teaching unit: 758 - EPC - Department of Project and Construction Engineering.
Degree: MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2014). (Compulsory subject).
Academic year: 2023  ECTS Credits: 4.5  Languages: Catalan, Spanish

LECTURER
Coordinating lecturer: Pujadas Álvarez, Pablo
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Ferré Tafalla, Xavier
Ikumi Montserrat, Tai

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CEME17. Ability on the design, manufacturing, construction and operation of industrial plants.
CEME18. Knowledge about manufacturing, construction, facilities, infrastructures, and urban design in the field of industrial engineering.
CEME19. Knowledge and abilities for the calculation and design of structures.
CEEECONS2. Apply the adequate knowledge for the design, construction and management of buildings and its surroundings, especially in the field of engineering.

TEACHING METHODOLOGY

The teaching methodology is divided in three parts:
- Face-to-face exposition sessions of the contents (master classes)
- Face-to-face sessions of the practical coursework (practical classes)
- Autonomous work of the study and realization of the exercises and the activities (realization of projects)

In the master classes, the basic concepts of the course are explained. The supporting material is the general reference of the course, which will be complemented during the classes with additional information. The students will have complementary information available in the Digital Campus Atenea. In the sessions of the practical coursework, the Professors will guide the students to the application of the theory concepts to solve exercises, basing especially in the critical reasoning at all times. Exercises derived from real cases will be set, and the students will have to solve it in and outside of the classes, in order to foster the contact and use of the basic necessary tools for the resolution of exercises.

The students will previously need to have been working at home to foster the understanding of the exercises presented. The students, in an autonomous way, will have to work the material provided by the Professors and the result of the sessions of the practical workgroup in order to assimilate and fix the concepts. The proposal for implementation of an industrial process will also have to be carried out from the analysis of a real industry of the same category (case study), where the applied knowledge acquired during the course will be reflected.
LEARNING OBJECTIVES OF THE SUBJECT

The aim of this course is to provide some basic knowledge in the interrelationship between the economic activities, especially the industrial ones, and its physical environment together with the construction which supports it, the specification of the needs of the implementation and the legal criteria to satisfy and fulfill.

What is to say, that this course aims to provide the student the basic knowledge so that he/she:
- Has the sufficient skills to analyse, define and communicate in a clear way, precise and thorough the requirements which an industrial facilitie must meet
- Meet the criterion to choose between different possible urbanistic, constructive and technical solutions, that one which is the most suitable and close to its needs
- And finally, so that the student is able to set in a basic way an industrial facility

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study</td>
<td>72,0</td>
<td>64.00</td>
</tr>
<tr>
<td>Hours large group</td>
<td>27,0</td>
<td>24.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>13,5</td>
<td>12.00</td>
</tr>
</tbody>
</table>

Total learning time: 112.5 h

CONTENTS

URBANISM

Description:
It aims to provide the theory and practical basic knowledge regarding to planning and urban management, as well as the execution in the urban public areas. Even so, taking into account sustainable criteria and regarding to the environment

Specific objectives:
- Regulatory framework of urbanism
- Interrelation between industry and land
- Urban planning

Related activities:
- Construction coursework
- Final exam

Full-or-part-time: 27h
Practical classes: 6h
Laboratory classes: 4h
Self study : 17h
## DESIGN AND CONSTRUCTION OF INDUSTRIAL PLANTS

### Description:
The basis to carry out the floor distribution of the industrial process will be given, explaining the types and basic ways which can present, which are the auxiliary elements of the production system, the general manufacturing services and the staff services. The target is that the student analyses a certain industrial process, making an analysis of the alternatives and the election of the distribution in a final plant.

### Specific objectives:
- Productive diagrams
- Machine sheets
- Floor distribution

### Related activities:
- Construction coursework
- Final exam

### Full-or-part-time: 53h
- Practical classes: 9h
- Laboratory classes: 10h
- Self study: 34h

## STRUCTURAL ENGINEERING

### Description:
Provide some basic knowledge of the geotechnical parameters of the floor and the different typologies of the structural elements which are in contact with the land, the way the student has available the election criteria of the type of structure.

### Specific objectives:
- Mechanics of the floor. Foundations
- Types of buildings and industrial plants

### Related activities:
- Final exam

### Full-or-part-time: 14h
- Practical classes: 5h
- Self study: 9h

## FIRE PROTECTION ENGINEERING

### Description:
Provide the scientific basis of the physical properties of the fire and the combustion and give some basic knowledge of the regulations and codes applicable to the engineering of fire protection.

### Specific objectives:
- Regulation workframe
- Passive elements for the fire protection

### Related activities:
- Final exam

### Full-or-part-time: 19h
- Practical classes: 7h
- Self study: 12h
GRADING SYSTEM

The ordinari evaluation is carried out through several procedures:
(1) a final exam (EF), in which the student has to demonstrate his ability to apply the knowledge learned and develop resolution procedures to short and specific questions;
(2) a course work (TC), in which the student has to present, in groups, a proposal for the implementation of an industrial process based on the analysis of a real industry;
(3) participation and performance in the course (PRC), in which the student’s participation in the activities carried out in the classroom is evaluated, punctual deliveries of short and practical exercises, and other activities proposed for the course so that the learning and learning The self-assessment of the knowledge acquired.

\[ N_{\text{final}} = 0.50 \cdot N_{\text{EF}} + 0.40 \cdot N_{\text{TC}} + 0.10 \cdot N_{\text{PRC}} \]

- In case of re-evaluation, the Nfinal will be the one corresponding to the mark obtained in the re-evaluation exam (which will be valued at a maximum of 7.0)

EXAMINATION RULES.

- No calculators, mobile phones or any other supporting material is allowed when doing the exams.
- All students who have not passed the subject in any of the two semesters, regardless of whether they have a grade or a qualification of Not Presented, will be able to take the re-assessment exam.
- The re-assessment exam is only for the exam part and will be valued at a maximum of 7.0.
- If the student who presents for re-assessment exam do not pass the subject, the highest mark will be kept between the result of the ordinary evaluation (if any) and that of the re-assessment exam.

BIBLIOGRAPHY

Basic:

Complementary: