## 220214 - Theory and Design of Structures

### Coordinating unit:
205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering

### Teaching unit:
737 - RMEE - Department of Strength of Materials and Structural Engineering

### Academic year:
2019

### Degree:
MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Teaching unit Compulsory)

### ECTS credits:
2,5

### Teaching languages:
Catalan, Spanish

### Teaching staff

**Coordinator:** Sanchez Romero, Montserrat

**Others:** Fernández Doblas, Sebastián

### Opening hours

**Timetable:** To be defined.

### Prior skills

Background knowledge of continuum mechanics, elasticity and strength of materials, matrix algebra and theory of structures.

### Requirements

undefined.

### Degree competences to which the subject contributes

**Specific:**
1. Knowledge and skills for the calculation and design of structures.

### Teaching methodology

Large group sessions: these sessions will be devoted to present the fundamental background of the subject, the problems solutions and the corresponding evaluations. A lecture-type model will be used according to the professor criteria demms most appropriate to achieve the goals that have been set for the course.

Small group sessions: these sessions will be devoted to solve problems and address experimental procedures proposed either by the professor or students. Its resolution is part of the autonomous learning.

### Learning objectives of the subject

The objective of this course is to provide to students the tools and knowledge necessary in disciplines dealing design of structural elements.
## Study load

<table>
<thead>
<tr>
<th></th>
<th>Total learning time: 62h 30m</th>
<th>Hours large group:</th>
<th>15h</th>
<th>24.00%</th>
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<tbody>
<tr>
<td></td>
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<td>Hours medium group:</td>
<td>0h</td>
<td>0.00%</td>
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<td>Hours small group:</td>
<td>7h 30m</td>
<td>12.00%</td>
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<td>Guided activities:</td>
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<tr>
<td></td>
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<td>Self study:</td>
<td>40h</td>
<td>64.00%</td>
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<thead>
<tr>
<th></th>
<th>Theory classes: 2h</th>
<th>Laboratory classes: 1h</th>
<th>Self study: 2h</th>
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<tbody>
<tr>
<td></td>
<td>Laboratory classes: 1h</td>
<td>Self study: 4h</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Theory classes: 3h</td>
<td>Laboratory classes: 2h</td>
<td>Self study: 8h</td>
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<tr>
<td></td>
<td>Laboratory classes: 3h 30m</td>
<td>Self study: 26h</td>
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## Content

### Introduction to design and structural analysis

**Learning time:** 5h
- Theory classes: 2h
- Laboratory classes: 1h
- Self study: 2h

### Theoretical background

**Learning time:** 7h
- Theory classes: 2h
- Laboratory classes: 1h
- Self study: 4h

### Structural elements

**Learning time:** 13h
- Theory classes: 3h
- Laboratory classes: 2h
- Self study: 8h

### Structural materials

**Learning time:** 37h 30m
- Theory classes: 8h
- Laboratory classes: 3h 30m
- Self study: 26h

### Description:

(ENG) Estructures metàl·liques
Estructures de formigó
Estructures de materialsavançats
220214 - Theory and Design of Structures

**Qualification system**

Final exam: 50%
Proposed activity: 30%
Problems and assignments: 20%

Mechanisms for addressing unsatisfactory scores:
There will be an option to take a recovery test to address an unsatisfactory final test score. The recovery test score will be capped to a 5.00/10.00 and it will replace the global test score if it is higher. This test will be held in a special date and will be open to all interested students.

**Regulations for carrying out activities**

Habitual ones.

**Bibliography**

**Basic:**


**Complementary:**

**Others resources:**