# 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:** 2018  
**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 approproate to acheive 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>Total learning time: 62h 30m</th>
<th>Hours large group: 15h 24.00%</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 0h 0.00%</td>
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<tr>
<td></td>
<td>Hours small group: 7h 30m 12.00%</td>
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<tr>
<td></td>
<td>Guided activities: 0h 0.00%</td>
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<tr>
<td></td>
<td>Self study: 40h 64.00%</td>
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</tbody>
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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 metà-líques
- Estructures de formigó
- Estructures de materials avançats
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: