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 deemed 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>Total learning time: 62h 30m</th>
<th>Hours large group: 15h 24.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 0h 0.00%</td>
</tr>
<tr>
<td></td>
<td>Hours small group: 7h 30m 12.00%</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 0h 0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study: 40h 64.00%</td>
</tr>
</tbody>
</table>

### 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 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: