Course guide
220214 - 220214 - Theory and Design of Structures

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 737 - RMEE - Department of Strength of Materials and Structural Engineering.
Degree: MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Compulsory subject).
Academic year: 2022 ECTS Credits: 2.5 Languages: Catalan, Spanish

LECTURER
Coordinating lecturer: Sanchez Romero, Montserrat
Others: Fernández Doblas, Sebastián

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>Type</th>
<th>Hours</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Hours large group</td>
<td>15,0</td>
<td>24.00</td>
</tr>
<tr>
<td>Self study</td>
<td>40,0</td>
<td>64.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>7,5</td>
<td>12.00</td>
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Total learning time: 62.5 h
## CONTENTS

### Introduction to design and structural analysis

<table>
<thead>
<tr>
<th>Full-or-part-time: 5h</th>
<th>Theory classes: 2h</th>
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<tbody>
<tr>
<td></td>
<td>Laboratory classes: 1h</td>
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<tr>
<td></td>
<td>Self study: 2h</td>
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### Theoretical background

<table>
<thead>
<tr>
<th>Full-or-part-time: 7h</th>
<th>Theory classes: 2h</th>
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<tbody>
<tr>
<td></td>
<td>Laboratory classes: 1h</td>
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<td>Self study: 4h</td>
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### Structural elements

<table>
<thead>
<tr>
<th>Full-or-part-time: 13h</th>
<th>Theory classes: 3h</th>
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<tbody>
<tr>
<td></td>
<td>Laboratory classes: 2h</td>
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<tr>
<td></td>
<td>Self study: 8h</td>
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### Structural materials

**Description:**
- (ENG) Estructures metàl·liques
- Estructures de formigó
- Estructures de materials avançats

<table>
<thead>
<tr>
<th>Full-or-part-time: 37h 30m</th>
<th>Theory classes: 8h</th>
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<tbody>
<tr>
<td></td>
<td>Laboratory classes: 3h 30m</td>
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<td></td>
<td>Self study: 26h</td>
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## GRADING 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.

## EXAMINATION RULES.

Habitual ones.
BIBLIOGRAPHY

Basic:

Complementary: