

## Course guide

### 340051 - RMA2-M5037 - Strength of Materials II

Last modified: 13/06/2024

**Unit in charge:** Vilanova i la Geltrú School of Engineering  
**Teaching unit:** 737 - RMEE - Department of Strength of Materials and Structural Engineering.

**Degree:** BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Optional subject).  
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Optional subject).  
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Compulsory subject).

**Academic year:** 2024    **ECTS Credits:** 6.0    **Languages:** Catalan, Spanish, English

#### LECTURER

**Coordinating lecturer:** Musté Rodríguez, Marta

**Others:** Musté Rodríguez, Marta  
Totusaus Margalet, Juan

#### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

**Specific:**

1. CE14. Knowledge and application of basics of material resistance.
2. CE22. Knowledge and ability to apply basics of elasticity and resistance of materials into behavior of real solids.

**Transversal:**

3. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.

#### TEACHING METHODOLOGY

The directed learning hours consist, on the one hand, of theoretical classes in which the teacher gives a presentation of the concepts of the subject to be learnt. Subsequently, and through practical exercises, they try to motivate and involve the students so that they actively participate in their learning. Support material is used: publications and solved problems. Laboratory practicals are carried out in pairs and allow the development of basic instrumental skills as well as introducing students to electrical extensometry. After each theoretical session, tasks outside the classroom are proposed, to be worked on individually or in groups. It is also necessary to consider other hours of autonomous learning, such as those dedicated to reading oriented readings and the resolution of the proposed problems.

#### LEARNING OBJECTIVES OF THE SUBJECT

To achieve the basic concepts of the resistance of materials and to combine them with the concepts of Elasticity, learnt in the subject of RMA I, in order to have basic criteria for the design and dimensioning of engineering and structural elements, as well as to have a theoretical basis for the subject of Structures and Industrial Constructions.

#### STUDY LOAD

Type	Hours	Percentage
Self study	90,0	60.00
Hours large group	45,0	30.00
Hours small group	15,0	10.00

Total learning time: 150 h

## CONTENTS

### (ENG) Flexió. Càlcul de bigues. Flexió esviada. Flexió hiperestàtica

**Full-or-part-time:** 12h 40m

Theory classes: 2h

Practical classes: 2h

Practical classes: 2h

Self study : 6h 40m

### (ENG) Torsió. Torsió hiperestàtica

**Full-or-part-time:** 7h 20m

Theory classes: 1h

Practical classes: 3h

Self study : 3h 20m

### (ENG) Sol.licitacions combinades

**Full-or-part-time:** 5h

Theory classes: 2h

Practical classes: 2h

Self study : 1h

### (ENG) Flexió. Bigues hiperestàtiques. Deformacions: teoremes energètics

**Full-or-part-time:** 13h

Theory classes: 5h

Practical classes: 5h

Laboratory classes: 2h

Self study : 1h

### (ENG) Torsió i torsió hiperestàtica

**Full-or-part-time:** 9h

Theory classes: 2h

Practical classes: 6h

Self study : 1h

### (ENG) Sol.licitacions combinades

**Full-or-part-time:** 13h

Theory classes: 4h

Practical classes: 8h

Self study : 1h

## GRADING SYSTEM

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THE COMPLETION OF THE INTERNSHIP AND THE PRESENTATION OF THE REPORTS IS A NECESSARY CONDITION TO PASS THE SUBJECT. ACORD CG/2024/03/08 DEL CONSELL DE GOVERN.

Qualifications:

C1 = Partial control

C2 = Final control

The evaluable content of this part will be the entire subject of the four-month period.

Only those students who can justify their absence for serious reasons on the day set for the test will be retaken individually. In the control will only be able to consult, in the part of problems, a form in a DIN A4 sheet on both sides that the student will be able to fill in with the information that he/she considers useful and in which his/her name will have to appear obligatorily. The inclusion of solved problems on this form is strictly forbidden. The form must be handed in at the end of the test. Failure to hand in the form or the inclusion of solved problems in it will automatically result in a qualification of 0 (zero) in the problem section. If a student wishes to take the test without a form, he/she must inform the teacher at the beginning of the test and will be exempted from handing it in. Under no circumstances will the form handed in be returned.

CP = Practicals to be carried out during the course.

The composition of the groups and the timetable will be communicated sufficiently in advance.

The final qualification of the course, after the two previous tests, will be the highest value calculated with the following expressions:

Final Qualification =  $0,35 - C1 + 0,55 - C2 + 0,1 - CP$ .

Final qualification =  $0,9 - C2 + 0,1 - CP$

In case the final qualification, after taking the tests C1 and C2, is equal or higher than 2 and lower than 5, the student will have the possibility of taking a re-evaluation exam, CR with all the material given throughout the four-month period.

In this case the qualification of the student, after the re-evaluation, will be given by the following formula:

Final qualification =  $0,9 - CR + 0,1 - CP$ .

This final qualification will indicate whether the re-evaluated student passes or fails the course. However, as the school regulations state, a student who has passed by re-evaluation will have a maximum final grade of 7 in the grade report. For those students who, despite being re-evaluated, do not pass the subject, the final grade that will appear in the grade report will be the higher of the two final grades obtained.

## EXAMINATION RULES.

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Electronic devices, such as mobile phones, may not be taken to the tests. In the course of the tests, the documentation previously established in class by the teacher and prepared by the student himself/herself in individual handwritten form may be consulted.