

## Course guide

# 340203 - TESA-M7P37 - Experimental and Simulation Techniques for Stress Analysis

Last modified: 17/05/2023

**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 MECHANICAL ENGINEERING (Syllabus 2009). (Optional subject).  
**Academic year:** 2023    **ECTS Credits:** 6.0    **Languages:** Catalan, Spanish

## LECTURER

**Coordinating lecturer:** Elsa Pérez Guindal

**Others:** Elsa Pérez Guindal  
Joan Totusaus Margalet

## DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

### Specific:

0. CE22. Knowledge and ability to apply basics of elasticity and resistance of materials into behavior of real solids.  
 00. D4. Knowledge of material elasticity and resistance and its application to resolve engineering problems.  
 000. D5. Ability to carry out and analyze experiments of mechanism and resistant elements.  
 0000. D29. Knowledge of editing and technical documents representation.

### Transversal:

07 AAT. SELF-DIRECTED LEARNING. Detecting gaps in one's knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one's knowledge.  
 05 TEQ N1. TEAMWORK - Level 1. Working in a team and making positive contributions once the aims and group and individual responsibilities have been defined. Reaching joint decisions on the strategy to be followed.

## TEACHING METHODOLOGY

## LEARNING OBJECTIVES OF THE SUBJECT

Learning different techniques for industrial use and computer simulation of stress and strain resistant parts, and in preparation of technical reports. It's delved into the electrical extensometry technique, the photoelasticity and FEM (Finite Element Method) using ANSYS. Trials are performed on resistant mechanical elements and internal stresses and strains are analyzed with each technique. The results are submitted in technical reports, in order to interpret data (based on theoretical calculations) and detect deviations from experimental tests, all this for the proper decision making in the future.

## STUDY LOAD

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

**Total learning time:** 150 h



## CONTENTS

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### Description:

**Full-or-part-time:** 2h

Theory classes: 2h

### Description:

**Full-or-part-time:** 2h

Theory classes: 2h

### Description:

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

Theory classes: 2h

Practical classes: 7h

### Description:

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

Theory classes: 2h

Practical classes: 7h

### Description:

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

Theory classes: 12h

## GRADING SYSTEM

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## BIBLIOGRAPHY

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### Basic:

- Análisis experimental de tensiones. Bilbao: Urmo, 1970.