

Academic Year: (2024 / 2025)

Review date: 16-05-2024

Department assigned to the subject: Mechanical Engineering Department

Coordinating teacher: ALVAREZ CALDAS, CAROLINA

Type: Compulsory ECTS Credits : 4.0

Year : 1 Semester : 1

OBJECTIVES

- Knowing different engineering test methods
- Learning the theoretical basis of different tests methods.
- Knowing the possibilities and the limitations of these test methods.
- Knowing what is a virtual test and its relation with real tests.
- Quantifying the reliability of the results of a virtual test by calculating its uncertainty.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Test techniques in Mechanical Engineering.
2. Strain experimental measuring: strain gauges.
3. Strain experimental measuring: fotoelasticity.
4. Virtual tests.
5. Simulation techniques uncertainty (FEM)

LEARNING ACTIVITIES AND METHODOLOGY

The training activities include:

- Lectures, where the theoretical concepts are presented. Students will receive lecture notes and key reference texts to help them follow the classes.
- Lab classes, where students experimentally verify the theoretical concepts and results seen in class.

ASSESSMENT SYSTEM

% end-of-term-examination:	50
% of continuous assessment (assignments, laboratory, practicals...):	50

The qualification of the subject will be distributed among the final exam and continuous assessment.

Percentages may vary, according to the difficulty of the continuous assesment, within the ranges: 40%-70% (continuous assesment) y 60%-30% (final exam).

Also, the lab classes are compulsory to pass the subject.

ADDITIONAL BIBLIOGRAPHY

- Centro Español de Metrología Guía para la expresión de la incertidumbre de medida, Centro Español de Metrología , 2008
- Chandrupatla, Tirupathi R.; Belegundu, Ashok D. Introduccion al estudio del elemento finito en ingeniería, Pearson Educación, 1999
- Dally, James W Experimental stress analysis, McGraw-Hill Inc., 1991

- Moaveni, Saeed Finite element analysis: theory and application with Ansys, FINANCIAL TIMES/PRENTICE HALL, 2003

- Nakasone, Y; Yoshimoto, S; Stolarski, T. A Engineering analysis with ANSYS software, Elsevier, 2006