

29750 - Measurement and Maintenance

Syllabus Information

Academic year: 2023/24

Subject: 29750 - Measurement and Maintenance

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 434 - Bachelor's Degree in Mechanical Engineering

ECTS: 6.0

Year: 4

Semester: Second semester

Subject type: Optional

Module:

1. General information

This subject focuses on interpreting industrial needs in the field of industrial quality so that students are able to provide adequate and optimal solutions, both from an organizational and technical point of view, to the problems related to quality assurance and maintenance in the company.

The student should be able to properly interpret the quality control needs of industrial products, select the most appropriate measuring and verification techniques for each need and know the methodologies related to the productive maintenance

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (<https://www.un.org/sustainabledevelopment/es/>), in such a way that the acquisition of the learning results of the subject provides training and competence to contribute to some extent to their achievement:

Goal 9. INDUSTRY, INNOVATION AND INFRASTRUCTURE

Target 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, using resources more efficiently and promoting the adoption of clean and environmentally sound industrial processes and technologies, with all countries taking action in accordance with their respective capabilities.

Goal 12. RESPONSIBLE PRODUCTION AND CONSUMPTION.

Target 12.5 By 2030, significantly reduce waste generation through prevention, reduction, recycling, and reuse

2. Learning results

1. Assimilates the scientific, technological and economic criteria to develop components and design techniques for precision equipment.
2. Knows the different types of measuring equipment and techniques, and selects the most appropriate for each need.
3. Knows and applies the methodologies for verification of productive systems.
4. Knows predictive maintenance techniques and their applications.

3. Syllabus

Theoretical-practical syllabus

- 1) Geometric product specification. Tolerances
- 2) Precision engineering design
- 3) Coordinate measurement
- 4) Verification of production systems
- 5) Industrial vision. Non-contact measurement and reverse engineering
- 6) Predictive maintenance techniques and their applications.

Laboratory practices

- 1) Industrial Metrology
- 2) Calibration, techniques and equipment in dimensional metrology
- 3) Coordinate measurement
- 4) Verification of production systems
- 5) Non-Contact Measurement and Reverse Engineering
- 6) Predictive maintenance techniques

4. Academic activities

Lectures, problem classes and practical sessions in the laboratory are given according to the timetable established by the

center (timetables available on its web page)

The detailed calendar of the various activities to be carried out will be established once the academic calendar has been approved (which can be consulted on the centre's website)

The list and dates of the different activities, together with all kinds of information and documentation about the subject, will be published in the Digital Teaching Ring (ADD) of the University of Zaragoza

As a guideline:

- Each week, 3 hours of classroom classes are scheduled.
- Approximately every two weeks the student will perform a 3-hour laboratory practicum.
- Additional activities to be scheduled (assignments, tests, seminars) will be announced well in advance, both in class and on the ADD
- The dates of the exams and tests of official calls will be fixed by the Centre's management.

5. Assessment system

The student may opt for a gradual evaluation, recommending a sequenced learning path along the term during which tests will be scheduled whose grades will contribute to the overall grade of the subject. In case of not passing any test of the gradual evaluation or wanting to raise a grade, the student may take the global evaluation to which they is entitled, in any of the two calls, which will consist of an exam that includes both blocks of the gradual evaluation, with the same scheme of distribution of points and minimum grades.

The **gradual evaluation** is divided into two blocks:

Test 1.

A written test consisting of solving theoretical-practical questions and problems related to the subject taught. It accounts for 30% of the final grade and a grade higher than 4.0 must be obtained to be averaged with the second part of the overall evaluation . This test will take place after the end of the term and will be held on the dates indicated in the calendar of exams prepared by the center.

Test 2.

In order to evaluate the applied and practical contents of the subject students are expected to elaborate a set of works, related to the theoretical, problem and practical sessions, in which they will solve the cases presented based on the tools learned

The criteria for evaluating these papers will be: adequate content, good approach, drawing interesting conclusions and good presentation.