Machine maintenance and diagnosis

Academic Year: (2022 / 2023) **Review date: 16-05-2022**

Department assigned to the subject: Mechanical Engineering Department

Coordinating teacher: CASTEJON SISAMON, CRISTINA

Type: Electives ECTS Credits : 3.0

Year : 4 Semester :

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Machine Mechanics
Machine Theory

OBJECTIVES

By the end of this subject, students will be able to have:
1. a systematic understanding of the key aspects and concepts of machine testing.
2. coherent knowledge of machine testing including some at the forefront of the branch in mechanical engineering.
3. the ability to apply their knowledge and understanding to identify, formulate and solve problems of machine testing using established methods;
4. the ability to select and apply relevant analytic and modelling methods in machine testing.
5. an understanding of methodologies in machine testing, and an ability to use them.
6. the ability to design and conduct appropriate experiments in machines, interpret the data and draw conclusions;
7. workshop and laboratory skills in machine testing.
8. the ability to combine theory and practice to solve problems of machine testing;
9. an understanding of applicable techniques and methods in machine testing, and of their limitations;

DESCRIPTION OF CONTENTS: PROGRAMME

- Introduction to industrial maintenance.
- Introduction to predictive maintenance.
- Vibrations in machines
- Faults in Machines
- Cost of life cycle and Maintenance in machines
- RAMS
- Machine inspection techniques.
- Techniques of diagnosis and correction of failures in machines.

LEARNING ACTIVITIES AND METHODOLOGY

Exhibitions lectures, classroom exercises and / or laboratories and personal work.
conferences of experts in the sector
visit to the Renfe maintenance Base

ASSESSMENT SYSTEM

SE1 FINAL EXAM. In which the knowledge, skills and abilities acquired throughout the course will be valued globally.
SE2 CONTINUOUS EVALUATION. It will assess the exercises, practices and tests throughout the course.

Assessment

SE1: 30% (Exam) (minimum grade for continuous assessment 4).
SE2: 70% (60% reports + oral presentations, 10% labs)

Attendance at labs is mandatory. Those students who do not attend the labs will not be able to take the exam in the ordinary call

% end-of-term-examination:	30
% of continuous assessment (assigments, laboratory, practicals…):	70

BASIC BIBLIOGRAPHY

- H. P. Bloch. Machinery Failure Analysis Troubleshooting., Gulf Publishing Co. Houston (1986) , 1986
- H. P. Bloch. Machinery Component Maintenance and Repair., Gulf Publishing Co. Houston (1985) ISBN: 0-87201-453-3 239 , 1985
- Braun S.-x Braun S.-Discover Signal Processing - an interactive guide for engineers, Wiley Press, 2009.
- David J. Ewins (Editor), Singiresu S. Rao (Editor), Simon G. Braun (Editor) Encyclopedia of Vibration, Three-Volume Set (Engineering) , Academic Press; 1st edition (October 12, 2001), 2001
- Heinz P. Bloch. Improving Machinery Reliability. , Gulf Publishing Co. Houston (1988) ISBN: 0-87201-455-X , 1988
- Lindley R. Higgins Maintenance Engineering Handbook. , McGraw-Hill (1995) , 1995
- Lindley R. Higgins Maintenance Engineering Handbook, McGraw-Hill (1995) , 1995
- S. Braun Mechanical Signature Analysis, Academic Press, (a book), (1986)., 1986