Advanced Technologies in Analysis and diagnostic of machinery

Academic Year: (2020 / 2021) **Review date: 21-01-2021**

Department assigned to the subject: Mechanical Engineering Department

Coordinating teacher: GOMEZ GARCIA, MARIA JESUS

Type: Compulsory ECTS Credits : 4.0

Year : 1 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Mechanical Enginering fundamentals.

OBJECTIVES

Diagnosis of mechanical mechanisms using data analysis of mechanical sensors masurements (Matlab).

The student will learn:
-Advanced techniques for mechanical vibration analysis
-Mechanical Systems identification based on data analysis

DESCRIPTION OF CONTENTS: PROGRAMME

C1 Y C2 Introduction: mechanical signals in time and in frequency domain and signal processing in Matlab.
C3 Introduction to spectral analysis
C7 Fourier methods
C10 Sampling
C4 Y C5 Linear systems and filters
C13 Rotating machinery diagnostic

LEARNING ACTIVITIES AND METHODOLOGY

Classroom (65% of ETCS) + homework (30% of ETCS) + conferences and seminars (5% of ETCS).

ASSESSMENT SYSTEM

Exam (50% of final mark) + group work (40% of final mark) + in-class tests (10% of final mark)

% end-of-term-examination:	50
% of continuous assessment (assigments, laboratory, practicals…):	50

BASIC BIBLIOGRAPHY

- S. BRAUN DISCOVER SIGNAL PROCESSING. An interactive guide for engineers., willey, 2008

ADDITIONAL BIBLIOGRAPHY

- John G. Proakis y Dimitris G. Manolakis Digital Signal Processing (4th Edition), Prentice Hall, 2006

- Robert B. Randall Vibration-based Condition Monitoring: Industrial, Aerospace and Automotive Applications, John Wiley & Sons, Ltd, 2010