

Academic Year: (2019 / 2020)

Review date: 11-12-2019

Department assigned to the subject: Mechanical Engineering Department

Coordinating teacher:

Type: Compulsory ECTS Credits : 3.0

Year : 2 Semester : 1

OBJECTIVES

By the end of this subject, students will be able to have:

1. knowledge and understanding of linear differential equations which are applicable in mechanical vibration problems
2. knowledge and understanding of key aspects of mechanical vibrations fundamentals;
3. the ability to apply their knowledge and understanding to identify, formulate and solve problems of mechanical vibrations using established methods;
4. the ability to combine theory and practice to solve problems of mechanical vibrations;
5. an understanding of applicable techniques and methods in mechanical vibrations, and of their limitations;

DESCRIPTION OF CONTENTS: PROGRAMME

One-degree-of-freedom systems: Free Vibrations without damping. Damped free vibrations. Forced vibrations. Transient and steady state Response.

Resonance.

Two-degree-of-freedom systems: Free Vibrations without damping. Damped free vibrations. Forced vibrations.

Generalization to n-degree-of-freedom systems.

Numerical methods of resolution of differential equations

BASIC BIBLIOGRAPHY

- R. Kent Nagle; E.B Saff Arthur and David Snider Fundamentals of differential equations, Pearson, 2012
- SS Rao and Fook Yap Fah Mechanical vibrations, Singapore : Pearson Education South Asia, 2011