

SYLLABUS CURRICULUM

COURSE	Course Name : Mechanical of vibration
	Course Code : TM184416
	Credit : 3 sks
	Semester : IV

COURSE DESCRIPTION

In this course, students will learn about mechanical vibration in 1 DoF and 2 DoF systems. Students will learn the basic concepts of vibration, mathematical modeling of vibration systems, formulate equations of motion, solve equations of motion to analyze vibration system response. Various mechanical vibration conditions are discussed in this course, among others, the response of the vibration of the system is not muffed and damped in the free condition of excitation or by force with various excitation. The vibration practice on the rotating shaft is also provided as a material support. The goal is that students have the ability and experience to model and analyze mechanical vibration problems especially in the field of mechanical engineering, as well as learn to think critically about utilization in various other fields so as to provide the right decision.

LEARNING OUTCOMES

LO6	Understand the engineering principles in mechanical system to identify, formulate and solve the problem of mechanical engineering.
LO9	Able to find the source of engineering problems in mechanical system through research that includes identification, formulation, analysis, data interpretation based on engineering principles.
LO10	Able to formulate the solution of engineering problem in mechanical system by considering economy, safety, environment and energy conservation.

COURSE LEARNING OUTCOMES

Students are able to analyze mechanical vibration on 1 dof and 2 dof system. Student able to explain basic concept of free body diagram and vibration mathematice model system, formulate movement equation and analyze vibration respond from undamped and damped in free and forced excitation with various excitation.

MAIN SUBJECT

The focus of this course are as follows:

- basic concept of mechanical,
- Degree of freedom meaning,
- movement equation,
- langrange equation,
- free undamped vibration respond,

- free damped vibration responds,
- forced vibration,
- base motion, transmissibility,
- harmonic excitation, impulse, periodic excitation.

PREREQUISITES

Kinematics of mechanism
Dynamics

REFERENCE

1. Rao, Singiresu S., "Mechanical Vibrations", 5th Edition, Prentice Hall, 2013.
2. Kelly, S. Graham, "Mechanical Vibrations: Theory and Applications", SI Edition, Cengage Learning, 2011.
3. Timoshenko, S. , "Vibration Problems in Engineering", Fifth Edition, John Wiley & Sons, Inc, 1990
4. Leonard Meirovitch, "Elements Of Vibration Analysis", International Edition, McGraw-Hill, 1986
5. Inman, D. J. "Engineering Vibration", 3rd Edition, Pearson Prentice Hall, 2008.