

Course Title: Mechanical vibration (620471)
Prerequisite: Dynamics (620212)
Text Book: Mechanical Vibration, by singiresu S. Rao 4th Edition, Pearson
Providing Dept.: Mechanical Engineering
Level: 4th year **Credit Hours:** 3

Course Goals:

To introduce a good knowledge for the Mechanical vibration theories for the translational and rotational systems. And also for one or multi-degree of freedom systems. The concepts for the mode shapes for the rigid and flexible materials.

Time Schedule:

Duration: 16 Weeks

Lectures: 3 hours / week

Objectives:

To enable the student to utilize the knowledge for the Mechanical vibration theories for the translational and rotational systems in problems concerning vibration in mechanical systems. This is to be accomplished for also one or multi-degree of freedom systems and the concepts for the mode shapes for the rigid and flexible materials.

Course Contents

	<u>Weeks</u>
✚ Dynamics review	1
✚ Writing the equation of motion for various systems	2
✚ Harmonic motion for one degree of freedom systems	2
✚ Two degrees of freedom systems	2
✚ Multi degrees of freedom systems	2
✚ Resonance and beat phenomenon	2
✚ Continuous systems	2

Mode of Assessment

1. **First Exam** (20%)
2. **Second Exam** (20%)
3. **Quizzes** (10%)
4. **Final exam** (50%)

References

1. Mechanical vibration By Inman.