DMX5201 Advanced Engineering Mechanics

Level	5
Course Code	DMX5201
Course Title	Advanced Engineering Mechanics
Credit value	2
Core/Optional	Core
Course Aim/s	Aim of this course is to provide advanced concepts in mechanics as applied to mechanical systems and its applications.
Course Learning Outcomes (CLO):	At the completion of this course student will be able to: CLO1: Model and analyze and multi degrees of freedom systems using various mathematical techniques. CLO2: Apply various numerical techniques to find natural frequencies in different type of systems. CLO3: Analyze vibrations in Strings, Wires, Rods, Beams Membranes and Plates using different mathematical approaches. CLO4: Analyze various types of faults in vibrating mechanical systems and recommend maintenance techniques and procedures. CLO5: Analyze vibration of mechanical systems using Computer Software CLO6: Analyze and interpret the dynamic behaviour of 3D rigid mechanisms.
Content	**Outline Syllabus:** Unit 01: Vibration of Discrete Systems Unit 02: Vibration of Continuous Systems Unit 03: Vibration Instrumentation, Monitoring & Fault Diagnosis Unit 04: Special Topics in Vibration Unit 05: Three dimensional kinematics and dynamics of rigid bodies **Laboratory work:** 1. Studying the vibration of Rotor Systems. 2. Studying whirling of shafts and finding the critical speeds. 3. Studying and Analyzing the Bearing Vibrations using Vibration Analyzer. **Case Study:** 1. Study of a Vibrating Mechanical System and Analyzing the system by modelling, using simulation software packages. 2. Model and analyse the behaviour of a 3D rigid body system.