

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):	<p>At the completion of this course student will be able to:</p> <p>CLO1: Model and analyze and multi degrees of freedom systems using various mathematical techniques.</p> <p>CLO2: Apply various numerical techniques to find natural frequencies in different type of systems.</p> <p>CLO3: Analyze vibrations in Strings, Wires, Rods, Beams Membranes and Plates using different mathematical approaches.</p> <p>CLO4: Analyze various types of faults in vibrating mechanical systems and recommend maintenance techniques and procedures.</p> <p>CLO5: Analyze vibration of mechanical systems using Computer Software</p> <p>CLO6: Analyze and interpret the dynamic behaviour of 3D rigid mechanisms.</p>
Content	<p>Outline Syllabus:</p> <p>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</p> <p>Laboratory work:</p> <ol style="list-style-type: none"> 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. <p>Case Study:</p> <ol style="list-style-type: none"> 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.