

DMX4204 Machine Dynamics

Level	4
Course Code	DMX4204
Course Title	Machine Dynamics
Credit value	2
Core/Optional	Core (for Mechanical Engineering)
Course Aim/s	The aim of this course is to provide theoretical concepts and practical knowledge related to mechanics of machines.
Course Learning Outcomes (CLO):	<p>At the completion of this course student will be able to:</p> <p>CLO1: Analyze the velocities and accelerations in link mechanisms.</p> <p>CLO2: Explain the use of Turning Moment Diagrams and demonstrate the knowledge by solving problems on fluctuation of energy and flywheel inertia.</p> <p>CLO3: Understand the principles of cams.</p> <p>CLO4: Analyze the friction on screw threads, bearings and clutches.</p> <p>CLO5: Evaluate force and power transmission criteria for belt, rope, chain drives and explain use and application of governors</p> <p>CLO6: Identified the difference between static and dynamic balancing and use the knowledge to determine the unbalances of simple systems with rotating masses and balance the system.</p> <p>CLO7: Compute the force and torque transmission in gears and gear trains.</p>
Content	<p>Outline Syllabus:</p> <p>Unit 1: Kinematics of machines Unit 2: Turning Moment Diagrams and Flywheel Unit 3: Cams Unit 4 : Analysis and application of friction Unit 5 : Power Transmission and Governors Unit 6 : Balancing & Vibrations Unit 7 : Gears & Epicyclical Gear Trains</p> <p>Laboratory work:</p> <ol style="list-style-type: none"> 1. To determine the characteristics of Screw Jack 2. To experimentally verify a dynamically balanced shaft having four eccentric masses 3. Gain the knowledge through the demonstration models, of commonly used mechanical devices to demonstrate the principle behind. 4. Determine the moment of inertia of a flywheel. <p>Design Class:</p> <ol style="list-style-type: none"> 1. Design of velocities and accelerations in link mechanisms.