

Innovative Teaching Learning (Pedagogy) Report

Name of The Faculty Member	Dr. Lalit N. Patil
Class	S.E. Automation and Robotics
Course Taught	Kinematics of Machinery
Academic Year	2024-25
Title of Pedagogy	“Enhancing Conceptual Understanding of Project Based Learning through Student Participants on Kinematics of Machinery ”
Introduction	<p>The field of Automation and Robotics heavily relies on an in-depth understanding of the motion of machinery components. Kinematics of Machinery (KoM) is a fundamental subject that helps students comprehend the relative motion between machine elements without considering the forces causing them. Traditional classroom approaches often fall short in bridging theoretical knowledge and practical applications. To address this gap, this report explores the application of Project-Based Learning (PBL) to enhance students’ conceptual grasp through hands-on experience and collaborative problem-solving.</p>
Objective	<ul style="list-style-type: none">● To deepen students’ understanding of key concepts in Kinematics of Machinery using real-world projects.● To improve analytical, design, and team collaboration skills.● To integrate theoretical principles with practical applications.● To evaluate the effectiveness of Project-Based Learning in engineering education.
Methodology	<ul style="list-style-type: none">● The course was conducted over one semester.● 60 undergraduate students of mechanical engineering were divided into 10 groups (6 students each).

	<ul style="list-style-type: none">• Each group was assigned a real-time kinematic mechanism or machine component to study, model, and simulate
Outcome	<ul style="list-style-type: none">• Students demonstrated better understanding of relative velocity, instant centers, and cam-follower dynamics• Communication, teamwork, and project documentation improved across all groups.

Images/ evidence	Students' Project Based Learning
	