

B.N.M. Institute of Technology

An Autonomous Institution under VTU

Department Mechanical Engineering

Innovative Teaching Methods

Academic Year: 2024-25

Sl. No.	Sem	Course Name with Code	Name of Faculty	Innovative Teaching Methods	Description	Impact Analysis
1	I	Engineering Graphics & Design (24EGD114)	Dr. B. S. Anil Kumar	Problem-Based Learning	Students solve real-world design and visualization problems using CAD tools	Improved analytical thinking, creativity, and design interpretation skills
2	I	Engineering Graphics & Design (24EGD114)	Dr. B. S. Anil Kumar	Collaborative Learning	Pre-recorded videos and reading materials provided before class for discussion	Encouraged self-learning and increased engagement during class sessions
3	VII	Mechanical Vibrations and Control Systems (21MEC171)	Dr. Harish	ICT-Enabled Learning through Virtual Laboratory	The virtual lab enabled students to visualize vibration phenomena, vary system parameters, compare theoretical and simulated results, and analyze system response without physical laboratory constraints.	Students demonstrated improved conceptual understanding of free and forced vibrations, resonance, damping, and natural frequency. The virtual experiments enhanced analytical and problem-solving skills.
4	I	Engineering Graphics and Design Lab (23EGD114)	Vishwanath B. R	Subject-Based Learning	Concepts reinforced through model drawing and design practice	Strengthened visualization and technical drawing accuracy
5	II	Engineering Graphics and Design Lab	Vishwanath B. R	Experiential Learning	Students perform real-time design	Improved practical understanding

		(23EGD124)			exercises and create 3D models	and CAD proficiency
6	III	Fluid Mechanics and Pneumatics (23MEC134)	Dr. B. S. Anil Kumar	Experiential Learning through Live Demonstrations	Live demonstrations and experiments carried out in the lab to explain fluid and pneumatic concepts	Enhanced conceptual clarity and improved understanding concepts
7	III	Fluid Mechanics and Pneumatics (23MEC134)	Dr. B. S. Anil Kumar	Collaborative Learning	Students learn theory through pre-class materials and apply concepts during class. Also understanding the concepts through flipped class	Promoted active learning and better problem-solving ability
8	IV	Introduction to AI & ML (23MEC142)	Dr. Harish	Project-Based Learning	Micro-projects assigned to implement machine learning models on datasets	Improved problem-solving, teamwork, and technical competency
9	V	Smart Materials & MEMS (22MEC152)	Dr. D. Shivalingappa	Flipped Classroom	Students learn theory through pre-class materials and apply concepts during class. Also understanding the concepts through flipped class	Promoted active learning and better problem-solving ability
10	VI	Reverse Engineering (22MEC1671)	Vishwanath B. R	Collaborative Learning	Students work in groups to disassemble and analyze product components	Strengthened teamwork, peer interaction, and technical communication
11	VI	Reverse Engineering (22MEC1671)	Vishwanath B. R	Experiential Learning	Hands-on practice in analyzing mechanical components and re-creating models	Improved practical knowledge and critical thinking
12	VI	Introduction to AI & ML (22MEC161)	Dr. Harish	Project-Based Learning	Micro-projects assigned to implement machine	Improved problem-solving, teamwork, and

					learning models on datasets	technical competency
13	VI	Finite Element Analysis (22MEC163)	Dr. D. Shivalingappa	Problem-Based Learning	Students solve engineering analysis problems using FEA concepts and simulation tools	Strengthened analytical and computational skills; improved design validation capability
14	VII	Mechanical Vibrations and Control Systems (21MEC171)	Dr. Harish	Experiential Learning	MATLAB simulations and lab experiments used to visualize control behavior	Improved understanding of dynamic systems and stability analysis
15	VII	Research Methodology & IPR (21MEC174)	K. J. Madhushree	Problem-Based Learning	Students solve research-oriented problems related to Innovation and IPR	Enhanced critical thinking, research aptitude, and problem-solving ability
16	IV	Introduction to AI&ML (23MEC142)	Dr. Harish	Crossword Puzzle	A subject-specific crossword puzzle was designed using key AI and Machine Learning terms such as intelligent agents, supervised learning, neural networks, search algorithms, and classification techniques. Students solved the puzzle individually or in groups to reinforce technical terminology and concepts.	The activity strengthened students' recall of AI and ML terminology, increased classroom engagement, and promoted collaborative learning. Students showed improved retention of technical concepts and actively participated in discussions, resulting in better performance in formative assessments.
17	VI	Introduction to AI&ML (22MEC142)	Dr Harish	Certification Course on Introduction to AI&ML	A certification course on Create a Lead Generation Messenger Chatbot using Chatfuel was conducted to introduce students to no-	Students improved their problem-solving, logical thinking, and industry-relevant skills, increasing their readiness for AI and digital

					code chatbot development for business and customer engagement.	transformation applications.
18	IV	Mechanics of Materials (23MEC143)	Manu A S	Crossword Puzzle	Crossword puzzles were used as an active learning strategy to reinforce key concepts and terminology in Mechanics of Materials .	The activity improved students' retention of technical terminology and conceptual understanding of Mechanics of Materials.
19	I	Engineering Graphics & Design (24EGD114)	Dr. B. S. Anil Kumar	Case-Based Learning	Real-life engineering drawing cases discussed to link theory with industrial practice	Enhanced application-oriented thinking and real-world problem understanding