

B.N.M. Institute of Technology

An Autonomous Institution under VTU

Department Mechanical Engineering

Innovative Teaching Methods

Academic Year: 2025-2026

Sl. No.	Sem	Course Name with Code	Name of Faculty	Innovative Teaching Method	Description	Impact Analysis
1	I	Mechanical & Civil Engg. Technology (25MCT114)	Dr.K.C.Anantha Padmanabham	Poster Preparation & Presentation	Students prepared technical posters and presented engineering concepts.	Improved presentation skills, teamwork, and conceptual understanding.
2	III	Fluid Mechanics & Pneumatics (24MEC134)	Dr.K.C.Anantha Padmanabham	Crossword Puzzle-Based Learning	Crossword activity covering fluid properties, Bernoulli's theorem, and flow measurement.	Improved memory retention, engagement, and concept reinforcement
3	IV	Thermal Engineering (25MCT144)	Dr.K.C.Anantha Padmanabham	Word Search Puzzle Activity	Students solved Word Search puzzles based on engineering terminology.	Enhanced subject recall, technical vocabulary, and active classroom participation.
4	I	Mechanical & Civil Engg. Technology (25MCT114)	Vishnu P	Crossword Puzzle	Crossword puzzles on Domains of Mechanical Engineering	Strengthened conceptual clarity, analytical thinking, and collaborative learning.
5	III	Material Science & Metallurgy (24MEC132)	Vishnu P	Crossword Puzzle	Crossword puzzles on Fatigue Analysis.	Strengthened conceptual clarity, analytical thinking, and collaborative learning.
6	IV	Fabrication of Advanced Materials (24MEL146)	Shwethashree B	Crossword Puzzle	Crossword activity covering casting processes, moulding materials, and foundry terminology.	Increased student interest, reinforced technical terms, and improved retention.
7	I	Mechanical & Civil Engg. Technology (25MCT114)	Madhushree KJ	Crossword and Word Search Activity	Students solved crossword and word search puzzles on engineering concepts followed by discussion on	Improved technical vocabulary, problem-solving skills, interdisciplinary understanding, and

					practical applications in Civil and Mechanical Engineering.	classroom engagement.
8	II	Mechanical & Civil Engg. Technology (25MCT124)	Sudindra S	Gamified Learning – Jeopardy Labs Quiz	Conducted an interactive quiz on MCT concepts using Jeopardy Labs, encouraging active participation and reinforcing theoretical concepts through a game-based learning approach.	Improved student engagement, concept retention, quick thinking, healthy competition, and formative assessment of learning outcomes.
9	II	Innovation & Design Thinking (22IDT11)	Sudindra S	Experiential Learning – Cardboard Bag Design Activity (IDT)	Students designed and fabricated cardboard bags involving measurement, marking, cutting, folding, and assembly. The activity emphasized hands-on learning, creativity, and sustainable reuse of materials.	Enhanced practical skills, design thinking, creativity, teamwork, problem-solving ability, precision in fabrication, and awareness of environmental sustainability.
10	VII	Mechanical Vibrations and Control Systems (22MEC171)	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, increased student engagement, and improved confidence in interpreting vibration responses.
11	VII	Mechanical Vibrations and Control Systems (22MEC171)	Dr. Harish	ICT-Enabled Teaching and Learning	MATLAB was used to simulate the Bode Plot of transfer functions. Students analyzed the frequency	The simulation improved students' understanding of frequency response analysis and stability concepts.

					response by observing the magnitude and phase plots.	
12	IV	Introduction to AI&ML (24MEC142)	Dr. Harish	Flipped class	Students were provided with pre-class learning materials, including video lectures, PPTs, and reading resources on AI and Machine Learning concepts. Classroom sessions focused on discussions, problem-solving, case studies, and quizzes to reinforce the concepts learned before class.	The flipped classroom improved student preparedness and active participation during lectures. Students demonstrated better conceptual understanding, enhanced critical thinking, and increased confidence in solving AI and ML problems. Class interaction and overall engagement significantly improved.
13	IV	Introduction to AI&ML (24MEC142)	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.
14	VI	Introduction to Data Analytics (23MEC161)	Dr. Harish	Crossword Puzzle	Crossword puzzles containing terms related to data analytics, statistics, machine learning, data visualization, hypothesis testing, clustering, and regression were conducted as an interactive	The activity enhanced students' understanding and retention of key data analytics concepts and terminology. It encouraged active participation, improved analytical thinking, and reinforced classroom learning, leading to

					learning activity. Students completed the puzzles individually and discussed the answers in class.	better quiz performance and increased student engagement.
15	IV	Introduction to AI&ML (24MEC142)	Dr. Harish	Poster Preparation & Presentation	Students worked in teams to prepare posters on emerging topics in Artificial Intelligence and Machine Learning, such as AI applications in mechanical engineering. Each team presented their poster and answered questions from peers and faculty.	The activity improved students' research, communication, presentation, and teamwork skills. It enhanced their understanding of real-world AI and ML applications.
16	II	Mechanical & Civil Engg. Technology (25MCT114)	Dr Mahendra Kumar	Crossword Puzzle	Crossword puzzles on Domains of Mechanical Engineering	Strengthened conceptual clarity, analytical thinking, and collaborative learning.
17	I	Python Programming & Applications (25PPA115)	Dr Harish	ICT-Enabled Learning through NeoColab	NeoColab was used as a cloud-based practical learning platform to integrate classroom teaching with laboratory activities.	NeoColab significantly improved students' practical programming skills, analytical ability, and understanding of data analytics concepts. Auto-evaluation and instant feedback helped students identify and correct errors independently.
18	V	Smart Materials and MEMS (23MEC152)	Dr D Shivalingappa	Certification Course on Smart Materials and MEMS	A value-added certification course was conducted to provide students with in-depth knowledge of smart materials, Micro-Electro-Mechanical Systems (MEMS), their fabrication techniques,	The certification courses enhanced students' understanding of advanced materials and MEMS technology beyond the prescribed syllabus.

					sensors, actuators, and real-world engineering applications.	
19	VI	Introduction to Data Analytics (23MEEC161)	Dr Harish	Certification Course on Introduction to Data Analytics	A certification courses on Introduction to Data Analytics using Microsoft Excel was conducted to provide students with practical knowledge of data analytics concepts, including data cleaning, sorting, filtering, descriptive statistics, Pivot Tables, charts, dashboards, and data visualization using Microsoft Excel.	Students acquired practical skills in data analysis and visualization using Microsoft Excel. The course improved their analytical thinking, decision-making, and ability to interpret engineering data.