



# GLOBAL ACADEMY OF TECHNOLOGY

## DEPARTMENT OF MECHANICAL ENGINEERING

### NEWS LETTER

FEBRUARY 2025–JULY 2025

#### A SEMESTER OF GROWTH & INNOVATION

Capturing the exciting workshops, industrial connects, guest lectures, and student achievements that defined the Mechanical Engineering Department this semester.

#### STUDENT ACTIVITIES

Student activities throughout the year showcased active participation in workshops, competitions, cultural programmes, and technical events, reflecting the department's vibrant and engaging learning environment.

#### INDUSTRIAL VISIT

The Industrial Visit offered students a valuable opportunity to observe real-time industrial systems and enhance their practical understanding.



### HOW COULD THAT BE?

Through this newsletter, we capture the collaborative efforts of students and faculty, highlighting their involvement in workshops, research, cultural events, industrial visits, and institutional activities.

# GLOBAL ACADEMY OF TECHNOLOGY

## INSTITUTE VISION

Become a premier institution imparting quality education in engineering and management to meet the changing needs of society.

## INSTITUTE MISSION

- M1: Create environment conducive for continuous learning through quality teaching and learning processes supported by modern infrastructure.
- M2: Promote Research and Innovation through collaboration with industries.
- M3: Inculcate ethical values and environmental consciousness through holistic education programs

## DEPARTMENT VISION

Become one of the leading providers of education in mechanical engineering with emphasis on research, development and innovation for the benefit of society.

## DEPARTMENT MISSION

- M1: Impart quality technical education in the field of mechanical engineering through excellent teaching-learning process, modern infrastructure and computing tools.
- M2: Prepare students for successful careers by providing placements and encouraging research, development and innovation through industry-institute interaction.
- M3: Instill professional ethics and environmental consciousness amongst students through inclusive development programs.

# GLOBAL ACADEMY OF TECHNOLOGY

## DEPARTMENT OF MECHANICAL ENGINEERING

### PROGRAM EDUCATIONAL OBJECTIVES (PEOs) of the DEPARTMENT

PEO of Graduate students in Mechanical Engineering aims to have:

- **PEO1:** Engineering competence, critical thinking, creativity, and ethical inclusivity in professional practice.
- **PEO2:** Continuous intellectual growth through advanced education, professional development, independent inquiry, and experiential learning.
- **PEO3:** Leadership and teamwork excellence throughout professional careers.

### PROGRAM SPECIFIC OUTCOMES (PSOs) of the DEPARTMENT

After successful completion of Mechanical Engineering Program, the graduates will be able to:

- **PSO1:** Specify, design, and analyze machine elements using CAD/CAE software.
- **PSO2:** Evaluate thermal performance of Heating, Ventilation & Air-Conditioning systems, electronic systems, Solar Roof Top Photo-Voltaic systems using experimental approach or /and CFD tools and design these systems for better performance.
- **PSO3:** Develop composite materials, manufacturing processes and products in an efficient, safe and cost-effective manner.

# PROGRAM OUTCOMES

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## Engineering Graduates will be able to:

- **PO1:** Engineering Knowledge: Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.
- **PO2:** Problem Analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4).
- **PO3:** Design/Development of Solutions: Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5).
- **PO4:** Conduct Investigations of Complex Problems: Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).
- **PO5:** Engineering Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6).
- **PO6:** The Engineer and The World: Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).
- **PO7:** Ethics: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9).
- **PO8:** Individual and Collaborative Team work: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.
- **PO9:** Communication: Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences.
- **PO10:** Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.
- **PO11:** Life-Long Learning: Recognize the need for, and have the preparation and ability for- (i) independent and life-long learning,  
(ii) adaptability to new and emerging technologies and  
(iii) critical thinking in the broadest context of technological change. (WK8).

# GUEST LECTURES

A guest lecture on Educational Opportunities Overseas was delivered by Mr. Moshinath Justus on 04-04-2025. With rich experience in global education guidance, he provided students with key insights into international admissions, scholarships, and academic pathways abroad.

SI NO	Name of the Program	No. of Students Attended	Date	Resource Person	Sem
1	Educational opportunities Overseas	26	04-04-2025	Mr Moshinath Justus	VI
2	Global Awareness Program (Higher studies)	20	17-06-2025	Mr Divay Tak	VI
3	Next-Gen HVAC	45	07-05-2025	Mohan Nimbalkar	IV & VI

A guest lecture on Next-Gen HVAC was delivered by Mr. Mohan Nimbalkar on 07-05-2025. With his expertise in advanced heating, ventilation, and air-conditioning systems, he introduced students to emerging technologies, energy-efficient solutions, and modern industry practices.

A Global Awareness Program on Higher Studies was held on 17-06-2025, where Mr. Divay Tak provided clear guidance on international education opportunities and pathways for aspiring students.

# INDUSTRIAL VISIT

Students of IV Semester visited Sparta Mech Ltd on 04-08-2025, gaining practical exposure to advanced manufacturing operations, while VI Semester students visited NTTF on 16-05-2025 to understand industry-oriented training and modern technical practices.

SI NO	Semester	Industry Visited	Date of Visit	Subject Mapping
1	IV Sem	Sparta Mech Ltd	04-08-2025	Measurements, Design and Manufacturing
2	VI Sem	NTTF	16-05-2025	Mechanical measurement and Metrology

# VALUE ADDED PROGRAMS

SI NO	Title of the Event	Date From -To	No of students	Sem
1	Geometric dimensioning and Tolerances	09-04-2025 - 15-04-2025	33	6

A Value Added Program on Geometric Dimensioning and Tolerances (GD&T) was conducted from 09-04-2025 to 15-04-2025, providing students with essential skills in precision engineering, design standards, and industrial drawing interpretation.

## NUMBER OF FUNCTIONAL MEMORANDUM OF UNDERSTANDING (MoU)s ACTIVE FOR THE ACADEMIC YEAR

Sl. No.	Name of the institution/ industry/ corporate house	Month and Year of signing MoU	Duration
1	Micropore	2024	18-03-2025 – 18-03-2030
2	Medini Technologies	2025	2-06-2025 - 2-06-2030
3	GAT – Toyota Centre of Excellence	2018	21-06-2018-Still active

## STUDENTS PARTICIPATION IN PROFESSIONAL EVENTS

Four students presented research papers at the International Conference on “Recent Innovations in Engineering Science & Technology,” showcasing their innovative ideas and strengthening the department’s research culture.

SI NO	Name of the Student	Name of the event	Date of the event
1	Dheemanth Prakash.B, Chiranjeevi.V, Prabhanjan G.Shastrri	Presented a paper in International conference on "Recent Innovations in Engineering science & Technology	09-05-2025 to 10-05-2025

## KARNATAKA STATE COUNCIL FOR SCIENCE AND TECHNOLOGY (KSCST) FUNDED PROJECTS

Three student teams participated in the Karnataka State Council for Science and Technology (KSCST) project programme presenting innovative, research-oriented solutions to real-world engineering challenges. Their contributions highlighted strong technical skills, creativity, and a commitment to applied research.

SI NO	Project Title	Name of Guide	Name of the students	Amount
1	Solar Powered Trash Compactors for Public Spaces	Dr. Bharat Vinjamuri	MR. H. Ajay Mr. I.Vamsi Sreenivasulu Reddy Mr. Shashi Preetham S	Rs. 6500/-
2	PureResp - Protective Headgear Integrated with Easy Breath PM Filtration Module	Dr. Shreekala N	Mr. Shreevatsa H. Mr. Varun Kumar M. Mr. Renuka Prasad K. R	Rs. 5000/-
3	Development of Three - Layer Solar Air Purifier	Mr. Kiran R Dr. G.R. Gurunagendra	Mr. Krupananda. I. K. Mr. Harshith Gowda J Mr. Yashas K.	Rs. 5500/-

## DETAILS OF BOOK CHAPTERS PUBLISHED BY FACULTY

Sl.No	Name of the Author(s)	Title of the Book chapter	Name of the Journal
1	Dr.G.R.Gurunagendra	Role of Silicon-Based Coatings in Combating High-Temperature Oxidation and Corrosion Material Degradation	Taylor & francis group, CRC press

## DETAILS OF RESEARCH PAPERS PER TEACHER IN CARE JOURNALS NOTIFIED ON UGC WEBSITE

SI NO	Name of the Author(s)	Title of the Paper	Name of the Journal	Year of publication
1	R.Kiran	Experimental investigations on the Mechanical behavior of Basalt fabric reinforced epoxy composites	Journal of Polymer Research(Q2)	28-02-2025
2	Dr.Asha.P.B	Fabrication and wear characteristics of Al6066-Boron Carbide Particulate Composites	Journal of The Institution of Engineers (India): Series D-springer Nature(Q2)	05-04-2025
3	Dr.Asha.P.B	Influence of zirconium carbide particles on the mechanical characteristics of heat treated Al7475 alloy	Scientific reports(Q1)	29-04-2025
4	Mr.Poornachandra	Impact of Corner Modification and Cylinder Spacing on Aerothermal Behavior of Heated Square Cylinders	Journal of Computational Analysis and Applications(Q3)	30-04-2025
5	Dr.Chanakya C	Development and investigation of sustainable green PCB prepared with banana and sisal hybrid fiber	Materials Letters (SCI-2)	26-07-2025

6	Mr.Poornachandra, Dr.V.Ravikumar, Ms.Savitha.D.C, Mr.Kiran R Dr.Asha.P.B	Enhancing the Interfacial Adhesion and Mechanical Strength of Pultruded ECR–Glass Fiber Composites with Nanofiller-Infused Epoxy Resin	Journal of Composite science(Q1)	23-06-2025
7	Dr.G.R. Gurunendra	Application of the Taguchi technique to examine the wear patterns of zircon flour reinforcement in stir-cast zincaluminium composites	Result in Surfaces and Interfaces(Q2)	09-07-2025
8	Mr.Maruthi G V	Estimation of Engineering Properties for Coconut Shell Powder Reinforced 100% Bio-Degradable Beeswax Composites to Replace Wood Materials	MethodsX (Q2)	18-07-2025
9	Dr.Chanakya C	The effect of SiC particulates on the Al-Mg alloy to enhance the mechanical properties and characterisation studies through friction stir processing	Canadian Journal of Metallurgy and Material science	18-07-2025

## NPTEL ONLINE CERTIFICATION CLEARED BY FACULTIES

SI NO	Name of the faculty	Title of the program	Duration
1	Dr.Shreekala.N	NPTEL Online course on "Waste to Energy Conversion"	1-01-2025 to 30-03-2025
2	Dr.D.V.Ravi kumar	NPTEL Online course on " Collaborative Robots(COBOTS) : Theory & Practice	Februray to April 2025

# FACULTY DEVELOPMENT PROGRAM

## ATTENDED BY FACULTIES

Sl. No	Name of Teacher who attended the programme	Title of the programme	Duration (from - to) (DD-MM-YYYY)
1	Dr.Shreekala.N	FDP on " Modelling and simulation for structural and CFD Analysis in Aeronautical, Aerospace and Mechanical Engineering"	21-07-2025 to 25-07-2025
2	Dr.Ravi Kumar.V	FDP on " Modelling and simulation for structural and CFD Analysis in Aeronautical, Aerospace and Mechanical Engineering"	21-07-2025 to 25-07-2025
3	Dr.G.R. Gurunagendra	FDP on " Modelling and simulation for structural and CFD Analysis in Aeronautical, Aerospace and Mechanical Engineering"	21-07-2025 to 25-07-2025
4	Dr.Bharat.V	FDP on "Original and Review Manuscript Drafting, Plagiarism Checking and Free Publication Process"(Manuscript mastery 2025)	03-02-2025 to 12-02-2025
5	Dr.Bharat.V	FDP on "Original and Review Manuscript Drafting, Plagiarism Checking and Free Publication Process"(Manuscript mastery 2.0 , 2025)	03-04-2025 to 11-04-2025
6	Dr.Bharat.V	FDP on " Application of AI and SPSS in Quantitative Research Design"	18-06-2025 to 25-06-2025
7	Mr.R.Kiran	FDP on " Internet of Things: A Gateway to smarter connectivity"	07-04-2025 to 12-04-2025
8	Mr. Gurusharan	FDP on " Internet of Things: A Gateway to smarter connectivity"	07-04-2025 to 12-04-2025

9	Dr.G.R.Gurunagendra	ATAL FDP on" Recent Advances and Applications of Manufacturing in Industries 4.0"	03-02-2025 to 08-02-2025
10	Dr.G.R.Gurunagendra	ATAL FDP on "Strategic Leadership in Manufacturing & Industry 4.0: Driving Innovation for Future"	10-02-2025 to 15-02-2025.
11	Mrs. Savitha.D.C	Innovation ambassador training on "Advanced level"	IIC calender 2024-25
12	Dr.Bharat.V	International workshop on Research Manuscript Drafting and Patent Filing Process	24-04-2025 to 02-05-2025
13	Mrs.Savitha D.C	FDP on " Modelling and simulation forstructural and CFD Analysis in Aeronautical, Aerospace and Mechanical Engineering"	21-07-2025 to 25-07-2025
14	Dr.Bharat.V	Orientation program on " How to strengthen Internal Quality Assurance Systems(IQAS) of HEI for NAAC Binary Accreditation Frame work"	28-04-2025
15	Dr.Bharat.V	Fifth International Conference on Research Methodology for Qualitative and Quantitative Research 2025(COM 5.0)	28-03-2025 to 29-03-2025
16	Dr.Bharat.V	FDP on Research Manuscript, Patent , Thesis Drafting and Free Publication Process(FDP Research Pro Tech Mastery 2025)	20-03-2025 to 27-03-2025

# TECHNICAL ARTICLES BY STUDENTS

## GENERATIVE AI IN EDUCATION TRANSFORMING THE FUTURE OF LEARNING

By: Vikas Das V

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### **Abstract**

Generative Artificial Intelligence (Generative AI) is rapidly transforming the modern educational landscape. It enables machines to generate human-like text, images, code, and learning materials using advanced deep learning models. Educational institutions around the world are adopting AI-powered tools to enhance teaching efficiency, personalize learning experiences, and support student research. Tools such as ChatGPT and Gemini have become popular among students for learning assistance, writing support, and problem solving.

This article explores the concept of Generative AI, its working principles, major applications in education, benefits for students and teachers, ethical challenges, and the future potential of AI-driven learning systems. Understanding these developments is important because Generative AI is expected to play a major role in shaping the next generation of education technologies.

### **Introduction**

Education has always evolved alongside technological progress. From traditional chalkboard classrooms to digital learning platforms, technology has significantly changed how knowledge is delivered and accessed. In recent years, Artificial Intelligence (AI) has emerged as one of the most powerful technologies influencing education.

Generative AI is a branch of artificial intelligence that focuses on creating new content rather than simply analyzing existing information. These systems are capable of generating essays, explanations, images, programming code, and even educational materials.

For students, Generative AI functions like a virtual tutor that can explain complex topics in simple language, provide instant answers to questions, and assist with academic research. Teachers can also use AI to prepare learning materials, quizzes, and assignments more efficiently.

With the rapid advancement of digital technologies, Generative AI is becoming an important component of modern education systems worldwide.

### **Understanding Generative AI**

Generative AI works using advanced machine learning techniques known as deep learning. These systems rely on neural networks that are trained on massive datasets containing text, images, and other types of information. One of the most important technologies behind Generative AI is the Large Language Model (LLM). These models analyze billions of examples of human language and learn patterns that allow them to generate meaningful responses.

When a student enters a question or prompt, the AI system processes the input and predicts the most appropriate response based on the patterns it learned during training. Unlike traditional search engines that only provide links to websites, Generative AI can generate detailed explanations in conversational language.

Many leading technology companies are developing advanced AI models. For example, organizations like OpenAI, Google, and Microsoft are investing heavily in AI research and educational applications.

### **Applications of Generative AI in Education**

Generative AI is already being used in several areas of education to improve learning experiences and teaching efficiency.

#### **Personalized Learning**

AI systems can adapt explanations based on the student's learning level. For example, a beginner student may receive simple explanations, while advanced students can receive more detailed information.

#### **Automated Content Creation**

Teachers can use AI to generate lecture notes, quizzes, assignments, and study guides. This helps educators save time and focus more on student interaction and mentoring.

#### **Coding Assistance**

Students studying computer science can use AI-powered tools to generate sample code, understand programming concepts, and identify errors in their programs.

#### **Research and Academic Support**

Generative AI helps students summarize long research papers, generate literature reviews, and simplify complex academic topics. This makes research more accessible to students.

#### **Language Learning**

AI tools allow students to practice writing, grammar correction, and conversational skills in different languages. These systems can simulate real-life conversations and provide instant feedback.

#### **Benefits for Students and Teachers**

The integration of Generative AI into education provides numerous advantages for both students and educators.

For students, AI provides instant access to knowledge. Instead of waiting for classroom sessions or scheduled tutoring, students can ask questions and receive explanations immediately. This promotes independent learning and curiosity.

Generative AI also enhances creativity and productivity. Students can brainstorm ideas for essays, projects, and presentations with the help of AI systems. This encourages innovative thinking and deeper exploration of academic topics.

For teachers, Generative AI reduces workload by automating repetitive tasks such as preparing teaching materials and designing quizzes. Educators can use AI-generated insights to identify student learning gaps and provide targeted support.

Another important benefit is accessibility. Students from remote areas or with limited educational resources can access high-quality learning support through AI-based platforms.

## **Challenges and Ethical Concerns**

Despite its many benefits, Generative AI also raises several challenges and ethical concerns that must be addressed.

One major issue is academic integrity. Some students may misuse AI tools to generate assignments or essays without actually learning the subject matter. Educational institutions must develop policies that encourage responsible AI use.

Another concern is accuracy and reliability. AI models sometimes generate incorrect or outdated information because they rely on large datasets rather than real-time verification. Therefore, students should always cross-check AI-generated information with reliable academic sources.

Data privacy is another important issue. Educational institutions must ensure that student data used by AI systems is protected and handled responsibly.

To ensure ethical use, schools and universities must provide guidelines that promote responsible and transparent use of AI technologies.

## **Future of Generative AI in Education**

The future of Generative AI in education is extremely promising. As AI technology continues to improve, learning environments are expected to become more personalized, interactive, and adaptive.

AI-powered tutors may soon provide real-time guidance to students based on their individual learning patterns. These systems could track student progress, identify weaknesses, and recommend personalized study plans.

In addition, Generative AI may be integrated with emerging technologies such as virtual reality (VR) and augmented reality (AR) to create immersive learning experiences. Students could explore historical events, scientific simulations, or complex engineering concepts through interactive digital environments.

However, the successful adoption of Generative AI will require collaboration between educators, technology developers, and policymakers to ensure responsible and effective implementation.

## **Conclusion**

Generative AI represents a significant advancement in educational technology. By enabling intelligent content generation, personalized learning experiences, and automated assistance, it has the potential to transform traditional teaching methods.

Students benefit from instant guidance, improved creativity, and access to high-quality learning resources, while teachers can enhance productivity and focus more on meaningful student engagement.

Although challenges such as academic misuse and data privacy must be addressed, the overall impact of Generative AI on education is highly positive. With responsible implementation, Generative AI can help create smarter, more inclusive, and more efficient educational systems for the future.

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