Volume No. 09
Issue No. 01

SEPTEMBER 2025

MExpress

Mechanical Engineering Department's Official Newsletter

KUMARAGURU COLLEGE OF TECHNOLOGY

Department of Mechanical Engineering

Mechanical Engineering Association

REACH US AT

da.mec@kct.ac.in mea_kct MEAKCT meakct

EDITORS

Dr. P. S. Samuel Ratna Kumar

Assistant Professor - III & Head

Dr. B. N. Sreeharan

Assistant Professor – III

ASSOCIATE EDITORS

Ms. P. Kirubashini

Ms. S. Santhiya

Mr. T. K. Sri Yashwanth

Mr. N. S. Barath

Ms. K. Gayathri Sreha

Mr. P. G. Renith

CONTENTS

EDITORS PORTFOLIO

From the Editors...

Dear Readers,

As we open the 97th issue of our departmental newsletter, we are reminded once again that progress is built one step at a time—through consistent effort, collaboration, and a shared vision for excellence. This edition celebrates the strides we've taken together as a department in research, innovation, and learning.

Our faculty continue to elevate the academic landscape through impactful patents, high-quality publications, and successful research funding initiatives—such as the AICTE–RPS sanctioned project that drives sustainable energy solutions. Their participation in workshops, webinars, and conferences ensures that we remain aligned with emerging technologies and global best practices.

Our students keep the department vibrant with achievements at national-level events, hands-on projects, industrial visits, and internship assessments that connect classroom learning with real-world applications. Each success reflects their growing confidence, curiosity, and commitment to excellence.

The pages ahead are more than a record of activities—they are a testament to the spirit of innovation, teamwork, and continuous growth that defines the Department of Mechanical Engineering.

To every contributor and reader—thank you for making this journey meaningful. Here's to taking the next steps with renewed energy, purpose, and pride.

Warm regards,

Editors....

DEPARTMENTAL ACTIVITIES

Industry Linkage

Dr. V. Muthukumaran, Professor and **Dr. S. Balaji**, Assistant Professor – III, facilitated an Industry Interaction with **Fluidtek**, Coimbatore on 4th August 2025, focusing on the design and specification of a custom hydraulic power pack for a flexible-wall wind tunnel test section. The discussion enabled an effective exchange of technical insights, bridging academic expertise with industrial solutions.

Patents

Dr. V. Muthukumaran, Principal Investigator, **Dr. K. M. Senthilkumar,** Associate Professor, and **Dr. S. Balaji**, Assistant Professor – III, have filed a patent titled “Agricultural Assistant Robot”, which has been successfully registered. This innovation, developed under the design category at Kumaraguru College of Technology (KCT), is a significant step towards advancing automation in the agricultural sector.

Papers Reviewed

Dr. C. Velmurugan, Professor, reviewed two high-impact SCI-indexed manuscripts “Optimizing Laser Beam Welding Parameters and Correlation Analysis for UNS S32304 and SS304L for the Journal of Materials Engineering and Performance, and “Finite Element Analysis in Tibial Plateau Fractures: A Systematic Review of Literature” for the Journal of the Mechanical Behaviour of Biomedical Materials, contributing to global research quality and peer-review standards.

Faculty Development Programme

Dr. N. Sangeetha, Senior Associate Professor, attended a Faculty Development Programme on “Power Train Architecture, ECU Calibration and Simulink Modelling” organized at KCT from 23rd to 29th June 2025. The seven-day regional FDP enriched participants with hands-on insights into automotive systems and control strategies.

Research Fund Granted

Dr. C. Velmurugan, Professor, Department of Mechanical Engineering, along with Dr. A. Shyam, HOD, Sakthi Polytechnic College, and Mr. Rajesh Soni, Radha Energy Cell, Ludhiana, has received approval for a research proposal titled “Performance Enhancement in a Solar Parabolic Trough Collector with Optimized Receiver: A Sustainable Solution for a Greener Future” under the AICTE–RPS Scheme. The sanctioned fund amounts to ₹44.86 lakhs, supporting sustainable energy research and innovation.

Faculty Participation

Dr. B. N. Sreeharan, Assistant Professor – III, completed following online courses,

- Data Visualization in Excel
- Excel Skills for Data Analytics and Visualization
- Microsoft Copilot for Excel: AI-Powered Data Analysis
- ChatGPT & Generative AI: Prompt Engineering for Business
- Creating a Project Management Tracker using Excel

Dr. K. K. Arun, Assistant Professor – III, completed following online courses.

- Agile Project Management
- Shape and Property Control of Metals I & II
- Phase Diagrams I & II
- Robotics Process Automation for Smart Manufacturing
- Understanding Research Methods
- Ethics in Engineering
- Exploratory Data Analysis with MATLAB
- Frontiers in Flow Boiling

Dr. M. A. Vinayagamoorthi, Assistant Professor – III, attended an international webinar on "Engineering and Product Design Processes" through Coursera on 13th August 2025.

Mr. S. Prabhu, Assistant Professor – II, visited the CODISSIA Book Fair 2025 held at the CODISSIA Trade Fair Complex, Coimbatore, from 22nd to 25th July 2025, engaging with the latest academic and technical publications.

FACULTY RECOGNITION

Faculty as Resource Persons

Dr. K. K. Arun, Assistant Professor – III, served as a Journal Reviewer for "Recent Trends in Thermodynamics and Thermal Energy System" and the "Journal of Advanced Research in Industrial Engineering", both published by HBRP Publication Pvt. Ltd., on 25th August 2025 at the international level.

Dr. M. Balaji, Associate Professor, acted as Resource Person for Doctoral Committee meetings, conducting the final DC meeting for his scholar **Mr. S. Nandhagopan** on 11th August 2025 and for scholar **Mr. B. Logesh** on 29th August 2025 at KCT.

Journal Publication

Dr. K. K. Arun, Assistant Professor – III, published a research paper titled "Analysing the Impact of Abrasive Jet Machining on Aluminium Matrix Composite for Sustainable Manufacturing Applications" in AIP Publishing on 18th August 2025, a Scopus indexed journal. The study emphasizes sustainability and machining efficiency in advanced materials.

STUDENTS PROGRAMS ORGANISED

An Awareness Program on "Wellness Within" was conducted on 12th August 2025 at KCT, coordinated by **Dr. K. Krishnamoorthi**, Assistant Professor – III, **Dr. A. P. Arun**, Assistant Professor – III and **Mr. R. S. Mohankumar**, Assistant Professor – II, with **Dr. C. Gnanaprakash**, M.Sc., Ph.D. as the resource person. The event engaged 55 participants in discussions on physical and mental well-being.

A Training Program on Digital Twin Modelling and Simulation was organized on 1st and 2nd August 2025 at KCT, coordinated by **Dr. A. P. Arun**, Assistant Professor – III and **Dr. S. Thirumurugaveerakumar**, Associate Professor and **Mr. G. Vergin Vino**, Design Engineer, TANCAM, served as the resource person, guiding 134 students (66 on Day 1 and 68 on Day 2) on digital simulation applications in design and manufacturing.

Guest Lecture

A Guest Lecture on “Awareness about Preparation for CAT Exams” was organized for the 2023–2027 batch on 30th August 2025, with **Mr. Vasanthakumar,** faculty from 2IIM Online CAT Coaching, as the resource person. The session, coordinated by **Dr. M. Thirumalai Muthukumaran**, Associate Professor – III, engaged 50 students in strategies for effective preparation and competitive success.

Industrial Visit

The IV-year B.E. Mechanical Engineering students (39 participants) visited Layer Forge, Coimbatore on 22nd August 2025. The visit, coordinated by Dr. **C. Velmurugan**, Professor, **Dr. S. Rajesh**, Assistant Professor – II and **Mr. P. D. Devan**, Assistant Professor – II, provided valuable exposure to forging processes, advanced manufacturing methods, and industry practices.

To design and develop a mechanism for automation in a spinning mill, team members **Dr. N. Sangeetha** and **Dr. M. Thirumalaimuthukumaran** visited the textile mill on **August 12, 2025**. The visit was accompanied by **Dr. Jayapragasan**, AVP, LPT.

During the visit, the basic requirements of the industry and the processes involved in the spinning mill were studied in detail.

Career Guidance

The Department of Mechanical Engineering organized a seminar on “Study Opportunities at International Universities” on 5th August 2025, in collaboration with Career Zone. Resource persons **Ms. S. Nagalakshmi** and **Ms. Preetha Peter** guided final-year students on admission processes, test preparation, and university selection across countries including the USA, UK, Canada, Germany, and Australia. The session highlighted success stories of students admitted to globally reputed universities and provided practical insights on aligning academic goals with budgets and career aspirations.

The seminar was coordinated by **Dr. M. Thirumalai Muthukumaran,** Assistant Professor – III.

STUDENT ACTIVITIES

Student Achievements

Mr. Oscar Richerd G (23BME064), **Ms. Yuvashree K** (23BME111), and **Mr. Kishore V K** (23BAU049) participated in the National Level Symposium held at Kongu Engineering College on 6th August 2025 and received 3rd prize for their contributions in technical events, bringing laurels to the department.

Internship Assessment – II Year Mechanical Engineering (2024–2028 Batch)

The **Department of Mechanical Engineering** conducted the **Internship Assessment** for II Year students (Course Code: 24MEJ204) on **28th and 29th August 2025** at the **CAE Lab**. A total of **116 students** participated in the assessment, coordinated by **Dr. M. A. Vinayagamoorthi,** Assistant Professor – III, **IIPC Coordinator**, with evaluation carried out by a panel of academic faculty members.

Assessment Panel:

- 28.08.2025: Dr. M. A. Vinayagamoorthi & Mr. P. D. Devan
- 29.08.2025: Dr. M. A. Vinayagamoorthi & Dr. V. R. Muruganantham

Highlights of the Assessment:

- **Learning Outcomes:** Students demonstrated the industrial skills and technical knowledge acquired during internships, with presentations emphasizing practical exposure to tools, processes, and systems that complemented classroom learning.
- **Relevance to Academics:** Internships aligned closely with subjects in the curriculum, bridging theoretical knowledge with real-world applications in design, manufacturing, and quality control.

- **Problem-Solving Skills:** Students showcased how they tackled workplace challenges using engineering approaches, highlighting creativity, adaptability, and critical thinking.
- **Communication Skills:** Professional presentation abilities were assessed, focusing on clarity, confidence, technical vocabulary, and engagement with the audience.

Faculty Observations:

Faculty members commended the structured presentations and the problem-solving approaches demonstrated by students. They observed progressive improvement across both days, reflecting the students' academic growth and professional readiness.

Student Feedback:

- Internships provided meaningful connections between classroom concepts and industrial practices.
- Constructive feedback from faculty was appreciated, guiding students to enhance problem-solving and technical reporting in future projects.
- Students valued the assessment as a platform to showcase achievements, share experiences, and learn from peers.

The assessment underscored the importance of internships in shaping well-rounded, industry-ready graduates by blending academic learning with practical exposure.

Industrial Internship Assessment – III Year Mechanical Engineering

Course Code: U18MEP4704 – Industrial Internship
Date: 22nd August 2025
Venue: Mechanical Conference Hall

The **Department of Mechanical Engineering** conducted the **Industrial Internship Assessment** for III Year students on **22nd August 2025**. The event was coordinated by **Mr. P. D. Devan, Associate Professor – II** and **Dr. V. R. Muruganantham, Associate Professor, IIPC Coordinator**, with assessments carried out by invited industry experts, providing students with valuable professional feedback.

Assessment Panel:

1. Mr. P. D. Devan (AP/Mech) & Mr. P. Suresh, Managing Director, Hi-tech Engineering Works, Coimbatore
2. Dr. V. R. Muruganantham (ASP/Mech) & Mr. Sahasranamam Ramachandran, Manager, L.R. Fabrications, Coimbatore

Highlights of the Assessment:

- **Learning Outcomes:** Students showcased practical skills and technical expertise acquired during their internships, highlighting real-world exposure to tools, processes, and systems that complemented academic studies.
- **Link to Academics:** Internships provided strong connections to the curriculum, enabling students to apply theoretical knowledge in domains such as design, manufacturing, and quality control.
- **Problem-Solving Capabilities:** Students reflected on workplace challenges and explained how they applied engineering methodologies to develop solutions, demonstrating creativity, adaptability, and critical thinking.

- **Presentation Skills:** Assessments emphasized professional communication, with focus on clarity, confidence, technical vocabulary, and engagement with the audience.

Faculty Observations:

Faculty members appreciated the structured presentations, practical insights, and strong use of technical knowledge demonstrated by students. They noted steady improvement throughout the assessments, reflecting academic and professional growth.

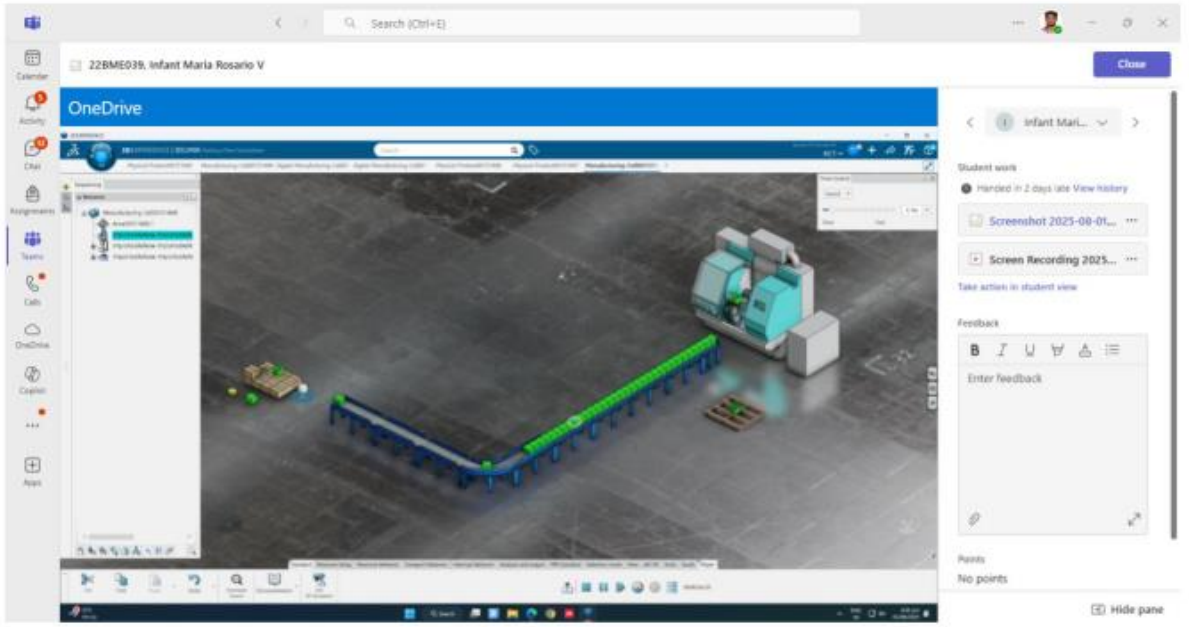
Student Feedback:

- Internships helped students effectively connect classroom concepts with industrial practices, making learning more relevant.
- Constructive feedback from faculty and industry experts was highly valued for improving problem-solving approaches and technical reporting.
- Students regarded the assessment as a valuable platform to present their achievements, share challenges, and gain peer learning experiences.

The event successfully emphasized the importance of industrial internships in bridging academia with real-world practice, while fostering confidence, competence, and career readiness among students.

SNAP SHOTS

Guest lecture – CAT Preparation for III Year students on 11.8.25



@Digital Twinn modelling and simulation

During Session: Study Opportunities at International Universities

Ms. Yuvashree, Mr. Oscar Richerd and Mr. Kishore V receiving the 3rd prize

Vision, Mission, POs, PSOs and PEOs

KUMARAGURU college of technology
COIMBATORE – 641 049

Institute Vision:

The vision of the college is to become a technical university of International Standards through continuous improvement.

Institute Mission:

Kumaraguru College of Technology (KCT) is committed to providing quality Education and Training in Engineering and Technology to prepare students for life and work equipping them to contribute to the technological, economic, and social development of India. The College pursues excellence in providing training to develop a sense of professional responsibility, social and cultural awareness and set students on the path to leadership.

Department of Mechanical Engineering

Department Vision:

To achieve global recognition for the programs of the department by promoting innovation, sustainability, and leadership, contributing to the society.

Department Mission:

1. To promote innovation in the Mechanical Engineering through curriculum, focusing on sustainability and ethical practices.

2. To create an active learning ecosystem for acquiring knowledge and skills in Mechanical Engineering.

3. To facilitate research in mechanical systems and sustainable technologies that have an impact on industry and society.

B. E. MECHANICAL ENGINEERING

Program Educational Outcomes (PEO's):

PEO 1: Graduates to pursue careers in Mechanical engineering and allied fields.

PEO 2: Graduates to engage in the execution of multi-disciplinary engineering activities.

PEO 3: Graduates to pursue professional development programs in Mechanical Engineering Science and Management.

Program Outcomes (PO's):

1. **Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.
4. **Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Engineering Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The Engineer and The World:** Apply contextual knowledge to assess societal, health, safety, legal, cultural, and environmental issues, and demonstrate the knowledge of and need for sustainable development.
7. **Ethics:** Apply ethical principles and commit to professional ethics, responsibilities, and norms of engineering practice, including inclusive and diverse behavior.
8. **Individual and Collaborative Team Work:** Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.
9. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, including writing reports, design documentation, making presentations, and giving/receiving clear instructions.
10. **Project Management and Finance:** Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments.
11. **Life-Long Learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change, including adaptability and tech awareness.

Program Specific Outcomes (PSO's):

1. Apply the fundamentals of science and mathematics to solve complex problems in the field of design and thermal sciences.

2. Apply the concepts of production planning and industrial engineering techniques in the field of manufacturing engineering.

M. E. INDUSTRIAL ENGINEERING

Program Educational Objectives (PEO's):

PEO 1: Graduates will be mid to higher level management / engineering professionals with responsibilities in engineering management, data analysis and business operations.

PEO 2: Graduates will be engineering professionals, and technology leaders who would manage such functions as plant engineering, production, supply chain and quality management.

PEO 3: Graduates would function as educators or researchers in academic institutions.

Program Outcomes (PO's):

PO1 : An ability to independently carry out research /investigation and development work to solve practical problems.

PO2 : An ability to write and present a substantial technical report/document.

PO3 : Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

PO4 : Apply knowledge and competencies in manufacturing, analytics, supply chain, quality and engineering management.

PO5 : Apply principles of industrial engineering to solve problems in industry.

PO6 : An ability to work as part of interdisciplinary teams, communicate effectively, model and design engineering systems optimally.