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KUMARAGURU COLLEGE OF TECHNOLOGY

Department of Mechanical Engineering

Mechanical Engineering Association

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CONTENTS

Details	Page
Editors' Portfolio	4
Departmental Activities	5
Industry Led Sessions	5
Industrial Visits	6
Faculty as Resource Persons	7
Paper Publications	8
Manuscripts Reviewed	8
Book Publication	9
Patent	9
Consultancy	10
Programmes Participated	10
Faculty Upskilling	11
Snapshot	11
Vision, Mission, POs, PSOs and PEOs	12

EDITORS PORTFOLIO

From the Editors...

Dear Readers,

This month's edition highlights the department's continuous efforts in strengthening academic excellence and industry engagement. A series of **Industry-Led Sessions** and **Industrial Visits** provided students with valuable exposure to real-world applications and emerging technologies. Faculty contributions as **Resource Persons** further reflected their expertise and active involvement in knowledge dissemination.

The department demonstrated strong research progress through notable **Paper Publications**, **Book Publication**, **Manuscripts Reviewed**, and **Patent**, reinforcing its commitment to innovation and scholarly excellence. Productive **consultancy activity** continued to enhance collaboration and practical problem-solving.

Faculty members actively engaged in **Programmes Participated** and **Faculty Upskilling** initiatives, ensuring continuous professional development in advanced domains. Student engagement remained vibrant through diverse activities supporting holistic learning and skill enhancement.

The Editorial Team sincerely thanks all **contributors, Associate Editors, and behind-the-scenes members** for their dedicated efforts in bringing out this newsletter. We also extend our gratitude to our **readers** for their continued support and encouragement.

Warm regards,
Editors





DEPARTMENTAL ACTIVITIES

Industry - led Sessions

A CPC Activity on **“Awareness Program on Mental Health & Wellbeing for Engineering Students”** was conducted on 09 April 2026 at the KCT campus. Sponsored by the CPC, focused on stress management, emotional wellbeing, anxiety handling, and positive coping strategies for engineering students.



Coordinated by **Dr. V. R. Muruganantham,** Associate Professor, the session promoted mental health awareness and encouraged students to seek support for a healthier academic environment.







An industry-led online session on **“Material Strength and Structural Behavior”** was conducted on 02 April 2026 through Microsoft Teams. The session was delivered by **Mr. M. Gautham Siddharth**, Associate Manager – Mechanical Design Excellence, who shared practical insights on material strength fundamentals and structural behavior through real-world industrial applications. Coordinated by **Dr. T. Karuppusamy,** Assistant Professor–III, and **Mr. P. D. Devan,** Assistant Professor–II, the session provided an interactive learning experience and helped bridge the gap between academic concepts and industry practices.



The Industry Delivered Course on **Tool and Die Design** was organized in association with TANCAM was organized on 10 April 2026. Coordinated by **Mr. R. S. Mohan Kumar**, Assistant Professor II, and **Mr. S. Prabhu**, Assistant Professor II.



Industry Visits



An industrial visit to **M/s. Sakthi Gear Products,** Annur, was organized on 18 April 2026. Coordinated by **Mr. P. D. Devan**, Assistant Professor–II, and **Dr. C. Velmurugan**, Professor, the visit included 35 students and 4 faculty members and provided practical exposure to gear design, manufacturing processes, production workflows, and quality inspection methods.





Guided by **Mr. Dinesh,** Managing Director, the visit helped students gain valuable insights into real-world mechanical engineering and industrial manufacturing practices.



As a part of the industry delivered course on **Tool and Die Design**, an industrial visit was organized in association with TANCAM on 10 April 2026. Coordinated by **Mr. R. S. Mohan Kumar**, Assistant Professor II, and **Mr. S. Prabhu**, Assistant Professor II, the visit included 20 students and 1 faculty member and was conducted at SIDCO, Kurichi, Coimbatore, covering industrial exposure at **M/s. Smart Equipments and Beta Products.**





Guided by **Mr. A. Jeyaraj**, Project Manager, TANCAM, the visit provided practical insights into tool and die design and manufacturing processes, effectively bridging academic learning with real-time industrial practices.

Faculty as Resource Persons



Dr. C. Velmurugan, Professor, highlighting inter-institutional academic coordination for the scholar's research progression in a synopsis submission meeting organized by the Department of Mechanical Engineering at Government College of Technology of Mr. Sridhar N (Reg. No. 19122697119), on 13 April 2026 at 3.00 PM.



Dr. A. P. Arun, Assistant Professor–III, served as one of the committed members in the 6th International Conference on Recent Trends in Engineering Technology and Management 2026 (ICRETM 2026) held on 10–11 April 2026. The hybrid conference, hosted by Suguna College of Engineering in collaboration with Samarkand State University, Uzbekistan.

Paper Publications



A collaborative research work titled "The Role of Sustainable Manufacturing in the Reduction of Greenhouse Gas Emission" authored by **Dr. K. K. Arun,** Assistant Professor – III was published in the Scopus indexed AIP Conference Proceedings. **Dr. Arun** published another research article in the same journal. Title of the research article published is "Analyse the Mechanical Properties of Kenaf-Flax Hybrid Composites Produced Using the Hand Layup Process".



A research article titled "A Novel Electrolyte Additive for Aluminium Air Battery to Enrich the Electrochemical Performance in Alkaline Environment", authored by **Dr. P.S. Samuel Ratna Kumar** was published by SCI indexed international journal 'Solid State Ionics', published by ELSEVIER.

Manuscripts Reviewed



Dr. B. N. Sreeharan, Assistant Professor III, reviewed a manuscript titled "Evaluation of Pulsed and Standard GMAW Waveforms for Energy Efficiency and Carbon Mitigation in Automotive Assembly: A Systemic Industrial Approach" for the Scopus-indexed journal Engineering Research Express.



Dr. K. K. Arun, Assistant Professor III, reviewed the following manuscript: "Aqua Bot: AI-Powered Robotic Waste Collector" for Journal of Advancement in Machines, MAT Journals Pvt. Ltd.

And following manuscripts for HBRP Publication Pvt. Ltd.

- Thermal Analysis and Modelling of Heat Transfer through Solid Walls
- Thermal Energy Storage Enhancement Using Phase Change Materials
- Design and Fabrication of a Locally Fabricated Electrically Heated Palm Fruit Sterilizer
- Emission Control Technologies for Sustainable Mechanical and Automotive Systems
- Biofuel Production from Extremophile Microorganisms
- Peristaltic Pumping of Newtonian Fluids in Channels and Tubes
- Automatic Generation of Product Manufacturing Information from 3D CAD Models Using Deep Learning
- Innovations in Plastic Recycling Technology
- CFD Analysis of Droplet/Column Spacing in Inline Horizontal Tubes

Book Publication



A new academic textbook titled **Finite Element Analysis** (First Edition, 2026) with ISBN 978-93-7361-024-5 has been published by Alpha International Publication, Tamil Nadu. Authored by **Dr. M. Thirumalaimuthukumaran,** Assistant Professor – III and others. The book provides comprehensive coverage of finite element methods and their engineering applications, serving as a valuable resource for undergraduate and postgraduate mechanical engineering students.

PATENT



A patent application titled **"A Smart Adaptive Vibration Monitoring and Control System for Industrial Machinery Using Hybrid Sensor Fusion and Real-Time Feedback Optimization"** has been filed under Application No. 202641042475 by **Dr. M. Thirumalaimuthukumaran**, Assistant Professor – III and others. The invention presents an advanced vibration monitoring and control framework that integrates hybrid sensor fusion, real-time signal processing, predictive analytics, and machine learning-based feedback optimization to improve machine health monitoring, fault prediction, and industrial operational efficiency.

Consultancy



A consultancy testing activity using a **Dynamic Vibration Shaker Table** was successfully carried out on 07 April 2026 under the guidance of **Dr. N. Sangeetha,** Senior Associate Professor. The study focused on the project titled “Design and Analysis of Macroscopic Auxetic Metamaterials for Low Frequency Vibration Isolation” and involved advanced experimental evaluation of vibration isolation characteristics. The consultancy request was received from PSG College of Technology, Coimbatore, for a project guided by Dr. Magesh Thiruvengadam, Assistant Professor, highlighting collaborative research efforts in vibration analysis and metamaterials engineering.

Programmes Participated



Mr. R. S. Mohan Kumar, Assistant Professor II, participated in a One Week Industry Certified Online Faculty Development Program titled **“AI in Action: Hands-On Tools for Research Writing and Content Creation”,** conducted from 23rd to 30th March 2026. The program was organized by the AI&DS Cohort, Kumaraguru School of Innovation, in association with Apophis Solutions.



Dr. K. K. Arun, Assistant Professor III, successfully completed the Twelve Day Refresher Course on **“Computational and Experimental Techniques for Materials and Engineering Systems”** conducted under the Malaviya Mission Teacher Training Programme (MM-TTP) of the University Grants Commission (UGC). The online programme was organized by Coimbatore Institute of Technology (CIT) from 09–21 February 2026.

Faculty Upskilling



Dr. B. N. Sreeharan, Assistant Professor III, has successfully completed multiple professional online certifications through Coursera, enhancing his skills in data analytics and business intelligence tools. He completed the following certified courses:

- **Intermediate DAX & Time Intelligence**
- **Power BI Fundamentals**
- **Excel 365 Advanced – Power Features and Automation**
- **Excel for Business with AI: Essentials**



Mr. S. Sivakumar, Assistant Professor II, has successfully completed the Coursera-certified course **"Next-Gen. Energy Storage – Battery and Hydrogen Technology"** offered by L & T EduTech. The programme focused on advanced battery systems and hydrogen-based energy storage technologies, highlighting his engagement in emerging sustainable energy solutions.

Snapshot



Our faculty team during the industrial visit

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.

** Focused SDGs are: 4, 8, 9, 12, 13, 17*

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 modelling 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 Teamwork: 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.