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Mechanical Engineering Department's Official Newsletter

KUMARAGURU COLLEGE OF TECHNOLOGY

Department of Mechanical Engineering

Mechanical Engineering Association

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EDITORS PORTFOLIO

From the Editors...

Dear Readers,

As we open the 98th edition of our departmental newsletter, we reflect on yet another month of steady progress, collaboration, and innovation that continue to shape our collective journey. This issue highlights our department's ongoing commitment to academic excellence, industry engagement, and research-driven learning.

Our faculty have continued to enrich the academic environment through patents, publications, professional certifications, and participation in development programmes and research workshops that strengthen the bridge between theory and practice. The department's strong industry linkage was further demonstrated through expert sessions and project reviews that offered students valuable insights into real-world applications and technological advancements.

Our students have upheld the spirit of curiosity and innovation through their achievements in competitions, hackathons, and collaborative projects that enhance both technical and professional skills. Their enthusiasm and dedication stand as a testament to the department's vibrant learning culture.

This edition celebrates the collective efforts that drive our mission forward—uniting knowledge, creativity, and purpose. To every contributor and reader, thank you for being part of this journey as we continue to move ahead with inspiration and pride.

Warm regards,
Editors....

DEPARTMENTAL ACTIVITIES

Industry Linkage

Dr. M. Thirumalaimuthu Kumaran, Assistant Professor - III, **Dr. P. R. Ayyappan**, Assistant Professor – SRG, and **Dr. M. A. Vinayagamoorthi**, Assistant Professor III, facilitated the Undergraduate Capstone Project Review – I organized by the Department of Mechanical Engineering on 20th September 2025.

The session brought together industry experts – **Mr. R. Mohan Prakash** (Senior Mechanical Designer, ZF Wind Power Coimbatore Pvt. Ltd.), **Mr. K. Muralikrishnan** (Manager – Manufacturing, Spintec Engineering Pvt. Ltd.), and **Mr. R. Murugan** (AGM – Quality, Elgi Equipments Ltd.) – who evaluated final-year student projects and shared valuable insights on problem formulation, design approaches, feasibility, and industry expectations.

The interaction created an effective exchange of technical knowledge, bridging academic progress with industrial practices.



Patents

A patent application for a "Multi-Axis Robotic Arm System for Additive Manufacturing in Freeform Environments" was filed on 27th September 2025. The inventors include **Dr. K. K. Arun**, Assistant Professor III, along with collaborators from other institutions. The invention integrates a robotic arm with six or more degrees of freedom, a modular deposition head, an environmental sensing system, and an AI-driven control unit for real-time toolpath generation and motion control, enabling precise material deposition on irregular or curved surfaces.

Papers Reviewed

Dr. B. N. Sreeharan, Assistant Professor III, reviewed a manuscript titled "Visualization of Shielding Gas Flow in DC TIG Welding" for the international journal 'Physica Scripta' (IOP Publishing). The review was recognized and added to his Web of Science researcher profile in September 2025.

Dr. K. K. Arun, Assistant Professor III, received a certificate of reviewing from MAT Journals Pvt. Ltd. in September 2025 for reviewing the manuscript entitled "Smart Lighting Control System Based on Occupancy Detection: A Low-Cost Arduino-Based Approach for Residential Automation".

Dr. C. Velmurugan, Professor, reviewed manuscripts for two international journals in September 2025:

- "Process Optimization and Correlation Analysis for Laser Beam welded" for the Journal of Materials Engineering and Performance.
- "Reinforcement Learning-Enabled Design of Topological Interlocking Materials for Sustainable Multi-Material Additive Manufacturing" for the journal Additive Manufacturing (Elsevier).

Faculty Development Programme

Dr. V. Manivel Muralidaran, Assistant Professor III, successfully participated and completed the AICTE Training and Learning (ATAL) Academy 6-Day Online Faculty Development Program on "Advanced Manufacturing & Industry 4.0" from 22nd to 27th September 2025, organized by CSI College of Engineering.

Dr. B. N. Sreeharan, Assistant Professor-III, successfully completed a Six-Day Online Faculty Development Programme on “Recent Trends and Advancements in Mechanical Science,” organized by Rathinam Technical Campus, Coimbatore, from 15th to 20th September 2025.

Dr. K. K. Arun, Assistant Professor – III and **Mr. P. D. Devan,** Assistant Professor – II, participated in the DST-ANRF Sponsored Five-Day Online Workshop on "Advanced Materials and Manufacturing: Characterization and Applications" organized by Department of Mechanical Engineering, National Institute of Technology Karnataka, Surathkal from 22nd to 26th September 2025.


Papers Presented

Mr. V. R. Navaneeth, Assistant Professor-II, virtually presented a paper entitled "In-Depth Structural and Functional Analysis of the Macular Ganglion Cell Layer Using Fourier-Domain Optical Coherence Tomography" at the 16th International IEEE Conference on Computing, Communication and Networking Technologies (ICCCNT 2025), held at IIT Indore from July 6th to 11th, 2025.

Faculty Participation

Dr. B. N. Sreeharan, Assistant Professor III, successfully completed the following online courses:

- How to use Custom and Conditional Formatting in Excel
- Maximize Productivity with AI Tools
- Complete Visual Guide to Machine Learning
- Use AI Responsibly
- Supply Chain Planning
- MS Outlook 365 Essentials+ Professional Email Writing
- Virtual Presentation Skills
- From Excel to Power BI

Dr. N. Sangeetha, Senior Associate Professor, attended the "Professional Development Conference & Exposition 2025" at Chennai Trade Centre from 12th to 13th September 2025, engaging with industry leaders and scientists including, Dr. A. Sivathanu Pillai (ISRO) and Dr. Mylswamy Annadurai.

Dr. Manikanda Prasath Karthikeyan, Assistant Professor II, has enhanced his expertise and teaching pedagogy by earning the prestigious CII Certified Professional in Carbon Footprint credential. Awarded by the Confederation of Indian Industry (CII) on 18th September 2025, this certification equips him with advanced knowledge and analytical skills in assessing, managing, and reducing carbon footprints in alignment with global sustainability goals.

Mr. P. D. Devan, Assistant Professor – II, participated in a Research Workshop Series on "Protecting Research Outcomes through Intellectual Property Rights", organized by Department of Mechanical Engineering, Kumaraguru College of Technology, Coimbatore on 20th September 2025.

Research Workshops

A Research Workshop Series titled "Protecting Research Outcomes through Intellectual Property Rights" was organized on 20th September 2025 at the Mechanical Conference Hall. **Dr. R Mohanraj,** Assistant Professor, Department of Production Engineering, PSG College of Technology, Coimbatore, served as the Resource Person. The workshop covered patents, copyrights, and design protections, encouraging researchers to secure and commercialize their innovations. Coordinated by **Dr. V. Muthukumaran,** Professor, **Dr. S. Balaji,** Assistant Professor-III, and **Mr. R. S. Mohan Kumar**, Assistant Professor-II, the workshop witnessed active participation from 14 faculty members representing Mechanical Engineering, Aeronautical Engineering, and KCIRI.

A session on “Winning Research Proposals” was held on 20th September 2025 as part of the Research Workshop Series. **Dr. Krishnaraj V**, Professor, Department of Production Engineering, PSG College of Technology, Coimbatore, led the workshop as Resource Person. His address focused on key elements of successful proposal writing — from defining objectives and crafting impactful abstracts to aligning with funding priorities and demonstrating research feasibility. Faculty participants gained practical insights into proposal structure, budget preparation, and reviewer expectations. The interactive session also highlighted strategies to strengthen innovation and clarity in research communication. The workshop was coordinated by **Dr. V. Muthukumaran**, Professor, **Dr. S. Balaji,** Assistant Professor III, and **Mr. R. S. Mohan Kumar,** Assistant Professor II, and saw enthusiastic participation from 10 faculty members of Mechanical Engineering and Automobile Engineering.

Faculty as Resource Persons

Dr. M. Balaji, Associate Professor, served as a resource person at a NABARD-funded Training program on 'Supply Chain Management' on 18th September 2025, organized by the Mettupalayam Agro Forestry Business Incubation Forum (MAFBIF) of the Forest College and Research Institute. He delivered a session on 'Recent Trends and Technologies in Supply Chain Practices'.

Journal Publication (Scopus Indexed)

Dr. A. P. Arun, Assistant Professor III, co-authored a research paper titled "Effect of Oxygen Vacancies on Structural, Morphological, Optical and Di-electric Properties of Co-precipitated Zn Doped Ceria (CeO_2) Nanoparticles" published in the Journal of Inorganic and Organometallic Polymers and Materials (Springer Nature) on 08 September 2025.

A manuscript titled "Marine Algal Microfiber and Agro-Waste Reinforced Crosslinked Polymer Composites for Sustainable Coastal Materials" authored by **Dr. K. K. Arun,** Assistant Professor III was accepted for publication in the Journal of Polymer and Composites on 26 September 2025.

Guest Lecture

Prof. Dr. V. Muthukumaran, Professor, delivered a guest lecture on "Recent Advancements and Applications of Biomaterials in Medicine & Career in Research" for the Biomedical Engineering students at Dhanalakshmi Srinivasan College of Engineering on 1st September 2025.

Industry Expert Sessions

Industry Expert Session on Additive Manufacturing was organized by the Department of Mechanical Engineering on 17th September 2025. The session featured **Mr. Joe Ajay** (Business Development Manager, EOS India Pvt Ltd, Chennai).

An insightful Industry Expert Session on “Advancements in Braking Technology” was organized on 4th September 2025, featuring **Mr. B. Ruban Deva Prasath,** Head of Vehicle Core and Senior General Manager at Brakes India Private Limited, Padi, Chennai. With his vast industry experience, Mr. Prasath shared valuable insights into the latest trends and technological advancements in automotive braking systems, helping students connect theoretical concepts with real-world industrial applications. Both the sessions were coordinated by **Dr. C. Velmurugan**, Professor, **Mr. P. D. Devan**, Assistant Professor II, and **Dr. S. Rajesh**, Assistant Professor II.

An Industry-led Session on CMM (Coordinate Measuring Machine) was conducted on 29th September 2025 in association with Spintec Engineering Pvt Ltd. The industry experts were **Mr. Barath S & Mr. Muralikrishnan K** (Quality Management Professionals). The faculty coordinator was **Dr. M. A. Vinayaga Moorthi,** Assistant Professor III.

STUDENT ACTIVITIES

Student Achievements

The following students from the Department of Mechanical Engineering showcased their talents and achieved recognition in various events:

In RC Car Racing:

- **Deenadayalan B (23BME016)**, **Oscar Richard G (23BME064)**, **Tamilselvan R (23BME095),** and **Yuvashree K (23BME111)** successfully participated in the RC Car Racing Challenge at the TechnoXian World Cup 2025, held at the NOIDA Stadium Complex from 30th August to 2nd September 2025.

In Hackathons:

- **Gayathri Sreha K (24BME034)** participated in Devspark 25, a 24-hour hackathon, which was an IEEE CS SYP high-impact zonal event held at KPR Institute of Engineering and Technology from 12th to 13th September 2025.

Undergraduate Capstone Project Review – I

As part of the academic schedule for 2025–26, Undergraduate Capstone Project Review – I was conducted on 20th September 2025 for final-year students at Kumaraguru College of Technology. The review aimed to assess project progress, offer constructive feedback, and bridge the gap between academic learning and industrial expectations. Renowned industry experts served as external reviewers:

- **Mr. R. Mohan Prakash**, Senior Mechanical Designer, ZF Wind Power Coimbatore Pvt. Ltd., **Mr. K. Muralikrishnan**, Manager – Manufacturing, Spintec Engineering Pvt. Ltd., **Mr. R. Murugan**, AGM – Quality, Elgi Equipments Limited

They engaged with student teams, evaluating their problem statements, design approaches, and methodologies, while sharing valuable suggestions for improving innovation and technical rigor. The session offered students real-world insights, emphasizing teamwork, documentation, and execution discipline.

Coordination for the event was handled by **Dr. Thirumalaimuthu Kumaran M,** Assistant Professor III, and **Dr. P R Ayyappan,** Assistant Professors - SRG, along with **Dr. M. A. Vinayagamoorthi,** Assistant Professor III, Department of Mechanical Engineering.

Capgemini Orientation Programme

A special orientation programme was organized for Mechanical Engineering Design and Analysis (MEDA) students by Capgemini on 18th September 2025, offering a clear window into the world of industry and technology.

The event provided a valuable platform for 74 students to gain direct insights from corporate experts. **Mr. S. Kamalakannan**, Manager at Capgemini Engineering, engaged in one-on-one interactions with the attendees. He discussed their career aspirations and provided clarifications on the industry environment, nature of work, and future career opportunities. Following this, **Mr. Mohammed Ithries**, a Capgemini Professional, conducted an insightful session. He shared details about real-world industry projects and offered a practical perspective on the application of academic knowledge in a professional setting.

The orientation served as a crucial bridge between academic learning and industry expectations, equipping MEDA students with a clearer vision for their professional journeys.

The students found the programme highly informative for their career planning. The event was successfully coordinated by **Dr. M. A. Vinayagamoorthi,** Assistant Professor III, and **Mr. P. Karthi,** Assistant Professor I, ensuring smooth conduct and active participation.

SNAP SHOTS

Prof Dr V Muthukumaran, Professor, at the guest lecture "Recent Advancements and Applications of Biomaterials in Medicine & Career in Research."

Dr. M. Balaji at a NABARD-funded Training program on 'Supply Chain Management'

Dr. N. Sangeetha, Senior Associate Professor, at the professional development Conference & Exposition

Gayathri Sreha K (24BME034) and her teammates at Devspark 25, a 24-hour hackathon organized by KPR Institute of Engineering and Technology

Capgemini Orientation Programme

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 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.