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MExpress

Mechanical Engineering Department's Official Newsletter

KUMARAGURU COLLEGE OF TECHNOLOGY

Department of Mechanical Engineering

Mechanical Engineering Association

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CONTENTS

EDITORS PORTFOLIO

Dear Readers,

It is with great joy and renewed energy that we present to you this month's departmental newsletter—an edition that reflects not just activities and achievements, but the heartbeat of a thriving academic community.

Our faculty members have taken center stage as resource persons, presented papers at prestigious platforms, published impactful research, reviewed manuscripts, and continued their professional growth with admirable commitment. The celebration of Ph.D. completions and the granting of patents stand as proud reminders of our academic depth and innovative spirit.

Our industry linkages grew stronger, opening pathways for meaningful collaborations and real-world relevance. Faculty participation in conferences, workshops, and continuous upskilling initiatives reflects our belief that learning is a lifelong journey—one that evolves with purpose and passion.

Equally inspiring are the contributions of our students. Their enthusiasm fills this issue through their activities, paper presentations, and vibrant participation across events and competitions. Their growth mirrors the values we aim to nurture—curiosity, confidence, and creativity. The snapshots in this edition freeze moments we cherish achievements, teamwork, celebrations, and the everyday sparks of inspiration that shape our department.

May we continue moving forward—with purpose, pride, and the persistent pursuit of excellence.

Warm regards,
Editors....

DEPARTMENTAL ACTIVITIES

A faculty and research delegation from the Department of Mechanical Engineering visited the **Defence Research and Development Laboratory (DRDL), Hyderabad**, on 25th November 2025 as part of the project titled "Design of Variable Nozzle Mach Number System for Tri-sonic Wind Tunnel." The visit provided comprehensive exposure to advanced aerodynamic testing facilities, including the Fixed-Block Supersonic Wind Tunnel, Supersonic Shock Tunnel, and the Variable Mach Number Flexible-Nozzle Tunnel. The team interacted with **Shri. V. Shanmugam** (Scientist-G), **Shri. R. Singh Prakash** (Scientist-E), and **Mr. Venkata Sai** (Scientist-C) to understand operational methodologies, flexible-nozzle deformation mechanisms for multi–Mach regimes, actuator arrangements, and flow visualization techniques using hydro-basin model testing. Representing the Mechanical Engineering Department, **Dr. V. Muthukumaran**, Professor and Principal Investigator and **Dr. S. Balaji**, Assistant Professor – III, participated in the visit, accompanied by **Dr. P. S. Premkumar** (Co-PI) and research fellows **Mr. S. Udhayakumar**, **Mr. S. N. Dinesh Kumar**, and **Mr. Y. Vijaysunder**.

Industry Linkage

Dr. M. A. Vinayagamoorthi, Assistant Professor - III and **Dr. T. Karuppusamy,** Assistant Professor - III, visited **Ultrafine Automations,** Periyanaickenpalayam, to explore the feasibility of establishing a research laboratory equipped with **EDM Drill and Wirecut machines** manufactured by Electronica. During the visit, **Mr. T. A. Rajkumar** (Deputy Manager – Sales, Electronica) provided technical insights on the research potential of EDM systems and assured support for future demonstrations, while **Mr. A. Arul Jeevan** from Ultrafine Automations shared practical inputs on industrial applications and operational

requirements. The visit helped refine the technical specifications for the proposed facility and align academic research goals with current industrial expectations.


Dr. B. N. Sreeharan, Assistant Professor - III and **Dr. M. A. Vinayagamoorthi**, Assistant Professor – III, visited Levigate Alloys Pvt. Ltd., Coimbatore, on 19th November 2025 to strengthen academic–industry collaboration in Powder Metallurgy. They met **Dr. K. Arul Kumar**, Managing Director, to discuss partnership and knowledge exchange opportunities. The visit led to the confirmation of an industry-led technical session on Powder Metallurgy at KCT and approval for a future student industrial visit for hands-on exposure to powder production technologies.


Mr. K. Manikanda Prasath, Assistant Professor - II, Department of Mechanical Engineering, visited **Sneka Industries, an MSME** unit in Kalapatti, Coimbatore, on 19th November 2025, where he engaged in an insightful discussion with **Mr. Selvaraj**, a seasoned entrepreneur with over 40 years of expertise in precision machining and global component exports. The interaction highlighted critical challenges faced by MSMEs, including the shortage of skilled tool designers, the struggle to achieve world-class quality, working-capital constraints, and the pressing need for digitalisation in manufacturing. The visit emphasized the importance of strengthening India's industrial ecosystem through improved financial, technological, and human-resource support, reflecting Coimbatore's enduring spirit of innovation and industrial excellence.

Manuscripts Reviewed

Dr. Arun K. K., Assistant Professor – III, served as an international peer reviewer for the International Journal of Innovative Technology and Exploring Engineering (IJITEE). He reviewed the manuscript titled "Comparison of Convolutional Neural Network Architectures for Underwater Image Classification" on 22nd November 2025, contributing to the advancement of global research in image processing and machine learning.

Faculty Participation

MATLAB EXPO 2025

Faculty members from the Department of Mechanical Engineering participated in the MATLAB EXPO 2025 held on 12th and 13th November 2025 through online sessions, gaining exposure to advanced tools in **Simscape Battery**, **Model-Based Design**, **Continuous Integration pipelines**, **AI deployment**, and **Reduced Order Modelling**. The sessions equipped the team with enhanced competencies in battery system modelling, embedded AI workflows, real-time control development, verification processes, and industry-aligned simulation tools—strengthening teaching, research, EV-related projects, robotics applications, and modern laboratory practices within the department.

The following faculty members attended the online MATLAB EXPO sessions:

1. Dr. K.K Arun.
2. Dr. M. Balaji.
3. Mr. P. Karthi.
4. Mr. P. D. Devan.
5. Mr. V. R. Navaneeth.
6. Mr. S. Subbiah.
7. Dr. T. Karuppusamy.
8. Mr. R. S. Mohankumar.
9. Dr. K. Krishnamoorthy.
10. Dr. S. Ramanathan.
11. Mr. S. Sivakumar.

Dr. S. Sivakumar, Assistant Professor – III, participated in the **IIC Regional Meet 2025** held on 25th November 2025 at **PSG College of Arts and Science, Coimbatore**, organized by the Ministry of Education's Innovation Cell and AICTE. The programme focused on strengthening the innovation ecosystem in higher educational institutions by fostering collaboration, sharing best practices, and promoting institutional excellence in innovation and entrepreneurship.

Mr. K. Manikanda Prasath, Assistant Professor – II, took part in the NASSCOM Technology Confluence 2025, themed **"Era of Intelligent Progress."** Held in November 2025, the event focused on emerging technological hubs that are set to drive future global growth and offered valuable insights into key industry trends shaping the next wave of intelligent advancement.

Faculty Achievement

Dr. M. Balaji, Associate Professor, successfully completed two specialized technical tracks titled **"Beyond the Labels: Leveraging AI Techniques for Enlightened Product Choices"** and **"Hands-On AI for Smart Appliances: From Sensor Data to Embedded Code."** His accomplishment reflects the department's strengthened expertise in artificial intelligence, embedded systems, and modern engineering applications.

Research Funds

Dr. C. Velmurugan, Professor, has successfully submitted a research proposal to the **Anusandhan National Research Foundation (ANRF)**, registered under the project. The proposal is currently under preliminary scrutiny and represents a significant step toward securing funding for advanced research initiatives within the department.

Doctoral Committee & Viva Vorce

The Department of Mechanical Engineering conducted the **Ph.D. Public Viva-Voce Examination** for research scholar **Ms. Dhiviyalakshmi L** on 20th November 2025 at 10:30 AM in the Mechanical Engineering Department Seminar Hall. She presented her thesis titled "Investigation of the Mechanical and Antimicrobial Properties of Natural Fibers Based Non-Woven Fabric for Air Filtering Applications in Comparison with HEPA Filters." The examination was supervised by **Dr. V. Muthukumaran**, Professor, Department of Mechanical Engineering, KCT.

Dr. C. Velmurugan, Professor, participated in the Annual Doctoral Committee (DC) Meeting for the Ph.D. scholar **Mr. Ramu P,** as an official DC member. The meeting was conducted online through Google Meet on 26th November 2025. His involvement in the session contributed to the academic review and progress evaluation of the scholar's doctoral research work.

Paper Publication

Dr. Arun K. K., Assistant Professor – III, co-authored a research paper titled "An Effective Methodology for Integrating Design Thinking Approach with Industry 5.0," published in the **2nd International Conference on New Frontiers in Communication, Automation, Management and Security (ICCAMS)**, IEEE.

ASME – Student Chapter

An ASME Student Chapter was established in the department in October 2025. ASME Director & President **Mr. Madhukar Sharma** attended the Board of Studies meeting as an Advisory Board member for 2025–26. He shared Strategy Vision 2030, emphasizing strong fundamentals, curricular flexibility, practical learning, and professional skills. **Mr. S. Subbiah,** Assistant Professor coordinated the activity.

Programmes Organised

The Department of Mechanical Engineering organized a three-day **“Workshop on Computational Fluid Dynamics Software”** from 5th to 7th November 2025 at the KCT CADD Centre. The workshop, handled by **Mr. B. Jeeva**, Assistant Professor - II, Department of Mechanical Engineering, KCT, and coordinated by **Mr. B. Jeeva** and **Mr. P. Pradeep**, Assistant Professors - II introduced participants to CFD methodology, ANSYS Workbench tools (Design Modeler, Meshing, Fluent Solver), and hands-on simulations of fluid flow problems including laminar (Hagen–Poiseuille) flow with analytical validation. A total of 17 second-year Mechanical Engineering students took part in the programme, and the practical sessions on meshing and solver setup received highly positive feedback, with students requesting an extended one-week version for deeper learning.

An industry-led technical session on “Gas Turbines” was conducted on 7th November 2025 as part of the GIFT–IIPC initiative. The session was delivered by **Dr. R. Tamilselvan**, SME – Mechanical Engineering, L&T EduTech, Chennai, and coordinated by **Mr. B. Jeeva** and **Mr. S. Sivakumar**, Assistant Professors - II. The session covered key concepts including radial inward

flow and axial flow gas turbines, along with axial and centrifugal compressors. A total of 43 students participated actively, and the resource person appreciated their ability to summarize technical concepts while suggesting the inclusion of advanced metallurgy topics—such as blade design and heat-treatment technologies—in future curricula to enhance industry relevance.

The Department of Mechanical Engineering conducted a specialized Skill Training Program on “Programming and Machining on CNC Machining and Turning Centre” on 7th November 2025 at the KCT CAM Laboratory. The session was delivered by **Mr. Krishna** from Vignani Electronics, Bangalore, and coordinated by **Dr. B. Senthilkumar**, Associate Professor and **Dr. T. Karuppusamy**, Assistant Professor – III, with technical support from **Mr. K. Ragupathy**. The program offered hands-on exposure to advanced manufacturing practices, emphasizing CNC programming, machining operations, and practical skill development for modern industrial applications.

The Department of Mechanical Engineering organized a “3-Day Hands-on Workshop on MS Office” for supporting and technical staff from 18th to 20th November 2025 at the KCT-CAM Lab. The workshop, coordinated by **Dr. V. R. Muruganantham**, Associate Professor and **Mr. P. D. Devan**, Assistant Professor – II, aimed to enhance digital documentation skills through training in professional document creation, data management, and presentation design using MS Word, Excel, and PowerPoint. A total of 12 staff members participated and reported improved accuracy, efficiency, and confidence in managing digital documentation for daily administrative tasks.

Faculty as resource person

Dr. B. N. Sreeharan, Assistant Professor – III, served as a resource person for a session on “Generative AI” organized by the **Sakthi Excellence Academy (SEA)** on 17th November 2025. The session was well received and appreciated for its informative content, effectively enriching participants’ understanding of emerging AI technologies.

Dr. M. Balaji, Associate Professor, served as the **Foreign Examiner** for a Ph.D. Oral Defence conducted online on 10th November 2025. The dissertation titled “Application of Artificial Intelligence Technologies on Improving Product Quality and Enhancing Customer Satisfaction in Manufacturing Organisations” was evaluated by an international panel that included professors from the **University of Johannesburg** and the **Cape Peninsula University of Technology**, South Africa. As an external expert, **Dr. Balaji** provided constructive insights on AI-driven improvements in logistics and manufacturing systems, contributing significantly to the academic depth and evaluation quality of the defence.

Paper Presentation

Dr. M. Balaji, Associate Professor and **Ms. T. Miruthubashini** (Research Scholar), presented their paper titled **"Lean Carbon Mapping Approach to Optimize Paper Usage in Offset Printing Industries"** at the 5th IEOM India Congress. The presentation was delivered in the **Sustainability, Energy and AI** session during a virtual session.

Faculty Upskilling

Dr. B. N. Sreeharan, Assistant Professor - III, has successfully undertaken multiple advanced online certification courses, strengthening his expertise in data analytics, AI-driven analysis, and programming.

- He undertook the **"Advanced Quantitative Statistics with Excel"** course on 9th November 2025, enhancing his proficiency in statistical computation and Excel-based analytical workflows.
- He further upskilled through the **"Advanced Data Analysis with ChatGPT"** course on 13th November 2025, gaining insights into AI-assisted data interpretation and automation techniques.
- He undertook the **"Learn Python: 1"** certification on 28th November 2025, strengthening his foundational programming skills for data processing and engineering applications.

Mr. P. D. Devan, Assistant Professor - II, successfully completed two 12-week **NPTEL–AICTE Faculty Development Programmes** offered by **IIT Madras** during the July–October 2025 session. He earned an **Elite certification** in Experimental Modal Analysis with a consolidated score of **66%** and completed the course on Aluminium-Based Alloys and Metal Matrix Composites with a consolidated score of **52%**. These certifications are recognized for promotion under the **Career Advancement Scheme (CAS)** as per AICTE guidelines.

Mr. Sivakumar S., Assistant Professor - II, successfully completed the online non-credit course **"Basics of Air Conditioning & Heat Load Calculation"**. The course, authorized by L&T EduTech and offered through Coursera, enhanced his expertise in thermal engineering systems and contributes to strengthening the department's competency in HVAC-related domains.

The Department of Mechanical Engineering conducted a specialized training session on "Laser Beam Welding" on 28th November 2025 at the Basic Workshop. The training was delivered by **Mr. Martin Raja**, Technical Head, FE & Tech, Coimbatore, and coordinated by **Dr. V. Manivelmuralidaran**, Assistant Professor – III and **Dr. S. Thirumurugaveerakumar**, Associate Professor. The session aimed to enhance faculty and technical staff proficiency in operating and effectively utilizing the laser welding machine for research and consultancy activities. Participants—including **Mr. P. Karthi**, **Mr. S. Prabhu**, **Dr. M. A. Vinayagamoorthi**, **Mr. P. Pradeep**, Assistant Professors – II & III, and technical staff—gained valuable hands-on exposure to advanced welding techniques, finding the training highly beneficial for future applications.

The Department of Mechanical Engineering, in association with **TANSAM (Tamil Nadu Smart & Advanced Manufacturing Centre)**, organized a Five-Day Faculty Development Programme (FDP) on "Industrial Plant Automation using Siemens Plant Simulation" from 21st to 26th November 2025 at the Yokogawa Centre of Excellence Lab. The programme was handled by **Mr. Subin Mathews**, Simulation Engineer, TANSAM, and organized by **Dr. A. P. Arun,** Assistant Professor - III, **Dr. B. Sabitha,** and **Mr. M. Ravichandiran**. The FDP aimed to enhance faculty aligned with Industry 4.0. Participants gained hands-on experience in factory simulation workflows, including real-time monitoring dashboards, bottleneck identification, throughput optimization, and material flow visualization. As part of a mini-project, faculty members developed complete plant models, analysed cycle times, and proposed optimization strategies based on simulation outputs.

Mr. V. Raghupathi, Technical Staff, successfully completed a One-Day National Level Hands-on Training on "Artificial Intelligence in IoT Devices" on 31st October 2025. The program was organized by the Department of Electronics and Instrumentation Engineering, **Sri Ramakrishna Engineering College, Coimbatore**, in association with the **Centre for Continuing Education (CCE)**, **ISTE**, and **IEEE**, providing valuable exposure to AI-enabled IoT applications and emerging smart technology trends.

STUDENT ACTIVITIES

Student Achievements

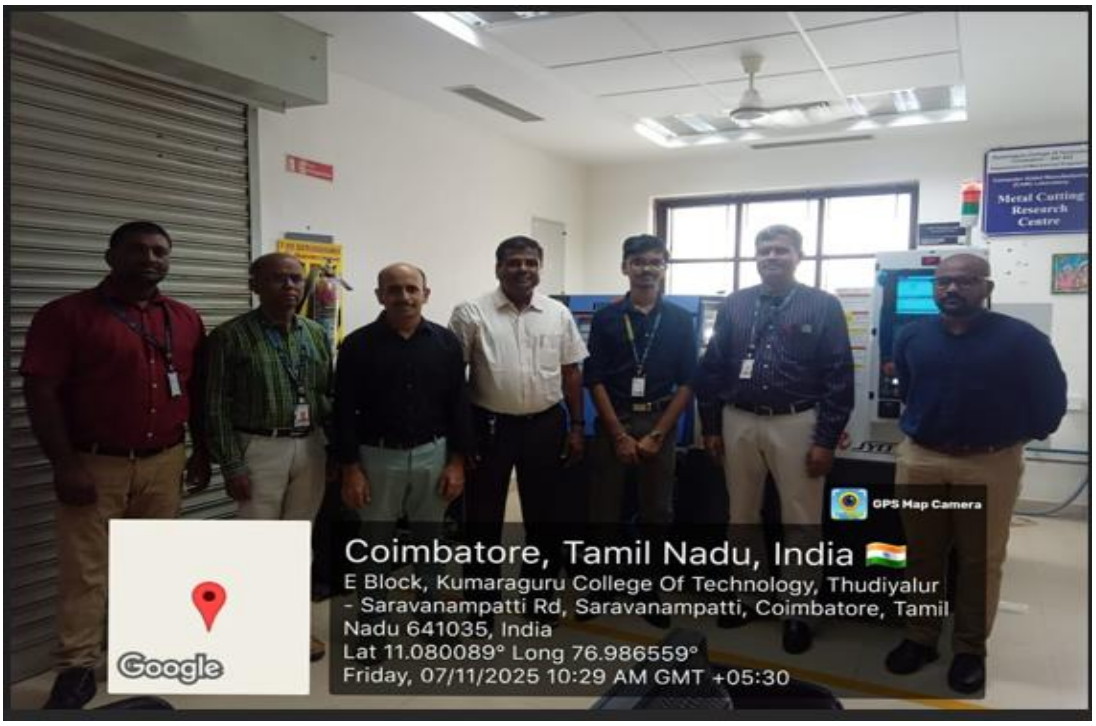
Mr. Aruthra Sudhakar and **Ms. Kirubashini P** achieved international recognition by securing the prestigious Silver Honour in the International Astronomy and Astrophysics Competition (IAAC) – 2025 Edition. **Mr. Aruthra Sudhakar** scored 18 points in the supervised Final Round, placing him among the top 5% of participants worldwide, while **Ms. Kirubashini P** scored 17 points, ranking her among the top 7% globally. Their accomplishments reflect exceptional problem-solving skills, deep conceptual understanding, and outstanding dedication to the fields of astronomy and astrophysics.

The **American Society of Mechanical Engineers (ASME)** Board of Governors has officially established a **Student Section** at Kumaraguru College of Technology, with the chapter awarded in **October 2025**. The formation of this chapter enables KCT students to engage with the global mechanical engineering community, offering access to professional development resources, international standards, technical events, and valuable networking opportunities that support their academic and career growth.

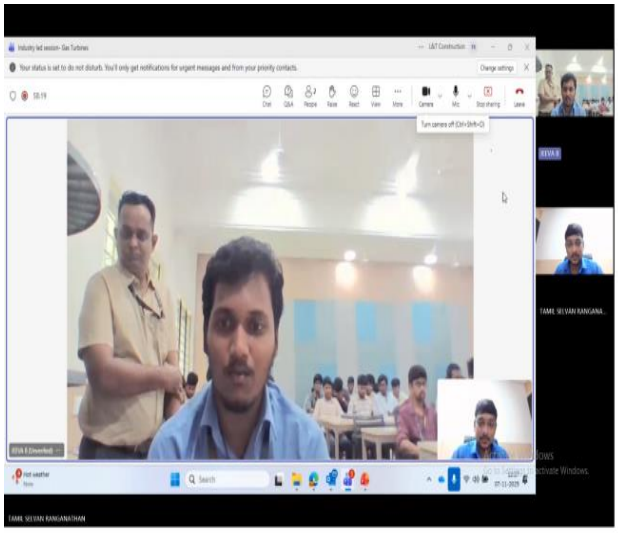
SNAP SHOTS

Our faculties during training of Laser Welding machine

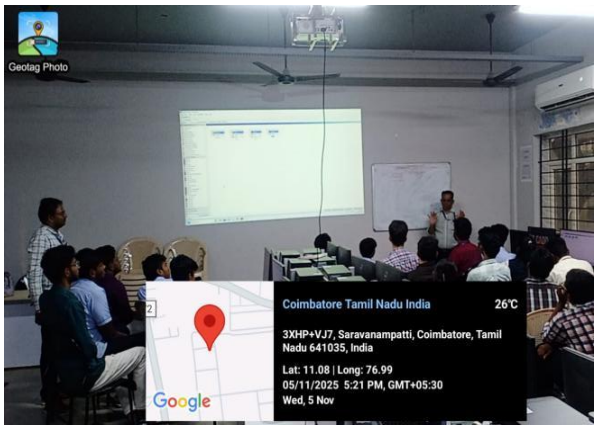
Our faculty members during 5-days Faculty Development Programme (FDP) in association with TANCAM



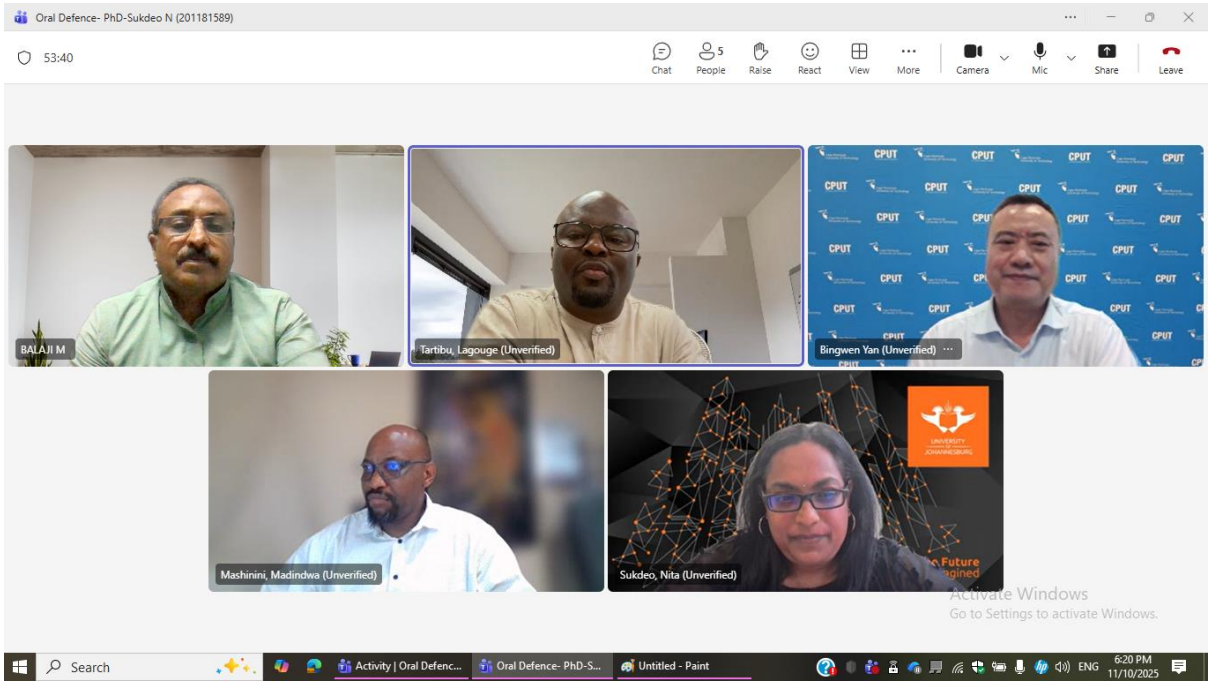
Our faculties during training on Programming and Machining on CNC Machine and Turning Centre



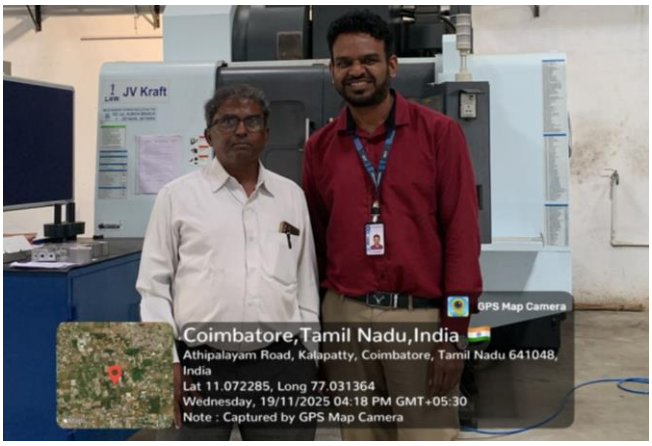
Industry led session of Gas Turbine for 3rd year students conducted by Mr. B Jeeva and Mr. S Sivakumar



During workshop on Computational Fluid Dynamics Software conducted by Mr. B Jeeva



Dr. M. Balaji, served as the Foreign Examiner for a Ph.D. Oral Defence conducted online



Mr. Manikanda Prasath during his visit to MSME Unit

Dr. T. Karuppusamy and Dr. M. A. Vinayagamoorthi during their visit to Ultrafine Automations

Dr. M. A. Vinayagamoorthi and Dr. B. N. Sreeharan during their visit to Levigate Alloys Pvt. Ltd

Mr. Manikanda Prasath during NASSCOM NTC 2025 Connect event

ASME
SETTING THE STANDARD

The Board of Governors have established
A Student Section at

Kumaraguru College of Technology

As evidenced by this Charter signed by the officers of the Society established

October 2025

Lester Su
President

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

Thomas Costabile P.E.
Executive Director/CEO

Certificate of Establishment of ASME Student Chapter

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.