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Mechanical Engineering Department's Official Newsletter

Volume No. 10
Issue No. 01

SEPTEMBER 2026



KUMARAGURU COLLEGE OF TECHNOLOGY

Department of Mechanical Engineering

Mechanical Engineering Association

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EDITORS PORTFOLIO

Dear Readers,

It gives us immense pleasure to present this edition of our Department Newsletter, showcasing the academic, research, professional, and extracurricular achievements of our faculty members and students.

This edition highlights the department's commitment to academic excellence and knowledge sharing through Guest Lectures and Resource Person Contributions. Our faculty members have actively shared their expertise and contributed to the academic development of students and professionals.

We are proud to feature the research contributions of our faculty through Journal Publications, along with their involvement in Scholarly Paper Reviews and Book Publications. The department has also made notable strides in innovation through Patent filing, demonstrating its commitment to technological development.

The newsletter further highlights faculty achievements in Professional Development and Certification Programmes, as well as their contributions to professional societies. These initiatives reflect the continuous efforts of our faculty to enhance their expertise and remain updated with emerging technologies and industry practices.

We are equally delighted to recognize our students' achievements in Sports and Competitions, showcasing their talent, dedication, and enthusiasm beyond academics. Such accomplishments reflect the department's encouragement of holistic development and active student participation.

We sincerely appreciate the contributions of all faculty members and students featured in this edition. We hope this newsletter offers valuable insights into the department's activities and achievements and inspires continued excellence in teaching, learning, research, and innovation.

Warm regards,
Editors





Guest Lecture on Self-Realization



Dr. B. N. Sreeharan, Assistant Professor III, organized a Guest Lecture under the course 24INO140 – A Step Towards Self-Realization on 29 September 2026. **Mrs. N. Karunambiga,** Assistant Professor from the Department of Tamil, United College of Arts & Science, Coimbatore, delivered the session on self-awareness, love, parental affection, universal love, and gratitude towards parents. The interactive session encouraged students to reflect on personal growth and meaningful relationships. The programme received positive feedback from the students, and the resource person appreciated their enthusiasm, attentiveness, and active participation.

Faculty as Resource Person

- **Goal Setting Session at PPG Institute of Technology**



Dr. S. Bhaskar, Associate Professor, was invited as the Resource Person for a Goal Setting Session organized as part of the First-Year Induction Programme for the 19th Batch of B.E./B.Tech. students at PPG Institute of Technology on 3rd September 2026 at 9:00 a.m. at the PPG Auditorium. The programme aimed to provide first-year students with valuable insights into setting clear goals, developing a positive mindset, and planning their academic and professional journey. Through his professional experience and guidance, **Dr. Bhaskar** inspired and motivated students to identify their aspirations, build confidence, and work towards achieving their goals with determination. The session helped students understand the importance of goal setting, self-discipline, and purposeful action in achieving personal and professional success.

Journal Publication



Dr. P. S. Samuel Ratna Kumar, HoD/ME, published a research paper titled "Electrochemical Investigation on Ni-Cu-P Coated Anodes for Alkaline Aluminium-Air Batteries." The study investigated Ni, Ni-Cu, Ni-Cu-P, and Ni-P coatings on AA5052 aluminium anodes to reduce self-corrosion and improve battery performance. Among the coatings, the Ni-Cu-P coated anode showed excellent overall performance, with a low weight loss of 0.0009 g compared with 0.0122 g for the uncoated anode. The findings demonstrate that Ni-Cu-P coating can effectively protect aluminium anodes and enhance the electrochemical performance and durability of alkaline aluminium-air batteries.



Dr. A. P. Arun, Assistant Professor III, published a research article titled "Zirconium-Doped Zinc Oxide Nanoparticles: Synthesis, Structural Characteristics, Physicochemical Properties and Emerging Applications" in The Bioscan. The article presents a comprehensive review of zirconium-doped zinc oxide (Zr–ZnO) nanoparticles, focusing on their synthesis methods, structural and physicochemical properties, and emerging applications. The study highlights the potential of Zr–ZnO nanomaterials in photocatalytic water treatment, antibacterial materials, electrochemical sensing, optoelectronics, and environmental applications. The review also discusses characterization techniques and key challenges such as dopant concentration, distribution, reproducibility, scalability, and safety, providing directions for the development of advanced Zr–ZnO nanomaterials for future applications.

Awards received



Dr. K. K. Arun, Assistant Professor III, was recognized by MAT Journals Pvt. Ltd. for his valuable contribution as a reviewer for the Journal of Mechanical and Mechanics Engineering (e-ISSN: 2581-3722). He reviewed the scientific manuscript titled "Fatigue Failure Mechanisms in Critical Tubular Joints of Gulf of Guinea Jackets: S–N, Fracture Mechanics and Corrosion Ageing Interaction." The certificate, awarded on 22 September 2026, acknowledged his insightful comments and dedicated reviewing service in maintaining the quality of the journal. MAT Journals appreciated his contribution and expressed their continued interest in seeking his expertise for future manuscript reviews.

Book Publication



Dr. M. Thirumalaimuthukumaran, Assistant Professor III, published a book titled “Process Planning and Cost Estimation” in its First Edition (2026) through Skyline Global Publications (SGP). The book, bearing ISBN 978-93-7085-028-6, serves as a valuable academic resource in the area of process planning and cost estimation, bringing together expertise from mechanical, chemical, petroleum, and marine engineering. This publication reflects his contribution to strengthening technical education and providing students and professionals with useful knowledge in manufacturing and engineering practices.

PATENT



- **Mr. P. D. Devan**, Assistant Professor II, was associated with a patent application filed with Intellectual Property India, Government of India, for an invention titled "Biodegradable Magnesium-Based Metal Matrix Composite for Orthopedic Implants and Method of Manufacturing Thereof." The application, bearing Application No. 202641102257, was filed as an Ordinary Application on 24 August 2026. The invention focuses on developing a biodegradable magnesium-based metal matrix composite for orthopedic implant applications, with potential significance in advanced biomedical materials. The patent application

was published on 4 September 2026 and is currently awaiting a request for examination.



Mr. P. D. Devan, Assistant Professor II, filed a patent application titled "Aluminium-Silicon Carbide Metal Matrix Composite Brake Drum and Method of Manufacturing Thereof" under the field of Mechanical Engineering, bearing Application No. 202641101875, on 24 August 2026. The application was published on 28 August 2026 and is currently awaiting a Request for Examination. The invention focuses on developing an aluminium-silicon carbide metal matrix composite brake drum and its manufacturing method, with the aim of improving brake performance, durability, thermal properties and reducing weight.



Dr. M. Thirumalaimuthukumaran, Assistant Professor III, received design registration for an invention titled "Device for Computer Numerical Control Machine" under Class 14-02 from Intellectual Property India – The Patent Office, Government of India. The design has been registered as Design No. 506585-001 on 22 June 2026, with the certificate issued on 27 August 2026. The registration has been granted under the Designs Act, 2000 and Designs Rules, 2001, providing protection for the registered design for an initial period of ten years, with the possibility of a further five-year extension as permitted by the Act and Rules.

Participation of Faculty



Dr. K. K. Arun, Assistant Professor III, successfully completed the "Sustainable Product Design for Engineers" online specialization offered by the Indian Institute of Technology Guwahati (IIT Guwahati) through Coursera on 17 September 2026. The three-course specialization included Introduction to Product Design, Advanced Product Design, and Sustainable Product Design, providing practical knowledge in user research, concept development, prototyping, Design for X, universal design, interaction design, Life Cycle Assessment, sustainable material selection, circular design, and sustainability standards. This achievement highlights his growing expertise in sustainable and innovative product design for engineering applications.



Mr. P. Pradeep, Assistant Professor II, successfully completed the online course "Basics of Robotics", authorized by Siemens and offered through Coursera, on 3 September 2026. The course provided an introduction to the fundamental concepts of robotics and strengthened his understanding of robotic systems and their applications. This achievement reflects his initiative in developing technical knowledge and skills in robotics, an important area of modern engineering and industrial automation.

Professional Society Membership



Dr. K. K. Arun, Assistant Professor III, was admitted as a Life Member of the Indian Society for Technical Education (ISTE) in September 2026. The membership, bearing LM No. 147686, was granted with the approval of the Executive Council of ISTE, an organization dedicated to promoting and improving the quality and standards of technical education. This membership marks a valuable professional achievement and reflects his commitment to the field of technical education and professional development.

Sports Achievements

Mr. Rishivanth C. A. (25BME057), an II-year Mechanical Engineering student, achieved notable success in Badminton (Men) at the Anna University Zonal and Inter-Zonal Tournaments 2026–2027. Representing Zone XI, he and his team secured First Position in the Anna University Zonal Tournament held at SNS College of Technology, Coimbatore, from 21 September 2026, and went on to secure Second Position in the Anna University Inter-Zonal Tournament held at Kongu Engineering College, Perundurai, from 25 to 27 September 2026. These achievements highlight his dedication, teamwork and sporting excellence, bringing pride to the institution and reflecting the institution's commitment to encouraging students in sports and extracurricular activities.

SNAP SHOTS





Guest Lecture on Self-Realization by **Mrs. N. Karunambiga**, Department of Tamil, United College of Arts & Science, Coimbatore

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 AUTOMATION AND ROBOTICS

PROGRAM EDUCATIONAL OBJECTIVES(PEOs):

PEO1: Graduates will be on roles in implementing cutting edge automation technologies by integrating intelligent systems and driving advancements in industrial processes.

PEO2: Graduates will excel as professionals by applying concepts of industrial robotics and advanced engineering principles to develop innovative and sustainable solutions.

PEO3: Graduates will engage in lifelong learning as educators and researchers in the field of industrial automation.

PROGRAM OUTCOMES (POs)

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.

Students should be able to demonstrate a degree of mastery over the area as

PO3: per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

PO4: Apply advanced engineering techniques, modern automation tools, and emerging technologies to solve complex industrial problems efficiently.

PO5: To collaborate effectively in interdisciplinary teams, demonstrating leadership and ethical responsibility in automation and robotics projects.

PO6: An ability to continuously engage in lifelong learning and professional development to adapt to technological advancements in industrial automation and robotics.