

MEXPRESS

MARCH 2024

Mechanical Engineering Department's Official Newsletter
Volume No. 07 Issue No. 07
For Internal Circulation Only



REACH US AT



Mechanical Engineering Association
Department of Mechanical Engineering
KUMARAGURU COLLEGE OF TECHNOLOGY



EDITORS



Dr. C. Velmurugan
Professor & Head



Dr. B. N. Sreeharan
Assistant Professor - II

ASSOCIATE EDITORS



Mr. S. V. Nithesh



Ms. P. Kirubashini



Mr. K. V. Vijay Adithya



Ms. S. Santhiya

CONTENTS

Details	Page No.
Editors' Portfolio	4
Paper Presentations	5
Paper Publications - Faculty	6
Manuscripts Reviewed	6
Awards Received	6
Collaborative Activities	7
PATENTS	7
Programmes Participated	8
Reviewers	8
MoU Signed	9
Industrial Visit	9
Student Participations	10
Student Article	16
Vision, Mission, POs, PSOs and PEOs	17

From the Editors...

Dear Readers,

Greetings and a warm welcome to the latest edition of our newsletter! As we traverse the realms of academia and innovation, we are excited to share with you the following accomplishments and endeavors that have shaped our academic community in last month.

Our esteemed faculty members have been actively engaging in the dissemination of knowledge through paper presentations, contributing to the academic discourse and pushing the boundaries of research. We take pride in the scholarly achievements of our faculty members, whose insightful research has been recognized and published in reputable journals and publications.

Dedicated to maintaining the highest standards of academic rigor, our faculty has been diligently involved in reviewing manuscripts, ensuring the quality and integrity of research within our academic community. Celebrating the achievements of our faculty we acknowledge and applaud the accolades garnered in various fields of study and research. Fostering a spirit of collaboration, our department continues to engage in meaningful partnerships and collaborative activities, enriching the learning experience for all.

Innovation takes center stage as our faculty members secure patents for their groundbreaking ideas and technological advancements, contributing to the ever-evolving landscape of knowledge and discovery. Our faculty members actively participate in diverse programs, conferences, and events, connecting with the wider academic community and staying at the forefront of industry trends. Building bridges with other institutions and organizations, we have entered strategic Memoranda of Understanding, laying the foundation for mutually beneficial collaborations and initiatives.

Students gain invaluable insights into real-world applications as they embark on enriching industrial visits, bridging the gap between theory and practice. Encouraging student involvement in extracurricular activities, our students actively participate in events, competitions, and conferences, showcasing their talents and passion for learning. Spotlighting the creativity and intellect of our students, this edition features a compelling article authored by one of our talented students, providing a glimpse into the diverse perspectives within our academic community.

As we reflect on these accomplishments, we extend our gratitude to the entire academic community for their dedication and enthusiasm. Together, we continue to shape the future of education and research. Thank you for your continued support and readership.

Best Regards,

Editors....



PAPER PRESENTATIONS:



Dr. M. Balaji, Associate Professor, presented a paper entitled “Comparative Studies on Adoption of Circular Economy Practices Across Indian Manufacturers” in the International Conference on Recent Advances in Industrial and Systems Engineering (RAISE) organized by Vellore Institute of Technology, Vellore during 20-12-2023 and 22-12-2023.

PAPER PUBLICATIONS:

Dr. V. Manivel Muralidaran, Assistant Professor – III, published his paper entitled “Literature Review on Under Water Welding”, in the Volume 11, Issue 1 of a scopus indexed International Journal of Research and Analytical Reviews.



Dr. S. Rajesh, Assistant Professor – II, published his paper entitled “An Evaluation Of High-Energy Batteries For Light-Duty Electric Vehicles From A Technical Perspective” in the Journal of Information Systems, a Scopus indexed journal. He also published another paper entitled "Influence of Silica rich HNT/MoS2 Hybrid Reinforcements on Mechanical, Wear and Corrosion Characteristics of Magnesium AZ31 alloy" in the Materials Research Express, a SCI indexed International Journal.

Dr. M. A. Vinayaga Moorthi, Assistant Professor – III, published his paper entitled “Evaluation of Tribological Behaviour of Stir Casted Aluminium AlloyHybrid Composites” in the SAE International, a Scopus indexed journal.



Dr. S. Thirumurugaveerakumar, Associate Professor, published his paper entitled “Literature Review on Under Water Welding”, in the Volume 11, Issue 1 of a scopus indexed International Journal of Research and Analytical Reviews.

Dr. B. N. Sreeharan, Assistant Professor – III, published a paper entitled “Effective Cleaning of Water Can using Semi-automatic System”, in the Volume 07 Issue 01 of Transactions on Innovations in Science and Technology.



MANUSCRIPTS REVIEWED:



Dr. P. S. Samuel Ratna Kumar, Assistant Professor – III, reviewed a manuscript entitled “Influence of silicon nitride (Si₃N₄) reinforcement on mechanical properties and dry sliding wear behaviour of AZ31 - Nano alumina (Al₂O₃) composites developed through the stir casting route” for the Physica Scripta, a SCI indexed International Journal.

Mr. K. Manikanda Prasath, Assistant Professor – II, reviewed the following manuscripts “Revolutionizing Ceramic Artistry: Harnessing the Potential of Cow Bone Ash as a Sustainable Opacifier in Enamel Production” for the Journal of Materials Science Research and Reviews. He also reviewed another manuscript entitled “Safety and Health Risk Management in Selected Kenya Tea Development Agency Factories in Bomet County, Kenya” for the Asian Journal of Research in Infectious Diseases.



Dr. V. Manivel Muralidaran, Assistant Professor – III, reviewed a manuscript entitled “Recent Research Progress in Friction Stir Welding of Aluminium and Magnesium Dissimilar Joint” for the Elsevier journal.

Dr. M. Balaji, Associate Professor, reviewed a manuscript entitled “Enhancing Supplier Selection for Sustainable Raw Materials: A Comprehensive Analysis Using Analytical Network Process (ANP) and Topsis Methods”, for the Mechanical and Industrial Engineering Journal.



Dr. M. Thirumalai Muthukumar, Assistant Professor – III, reviewed a manuscript entitled “Surface accuracy design for prototype manufacturing of fluid flowing channels based on comprehensive precision enhancement”, for the Engineering Manufacture Journal.

AWARDS RECEIVED

Mr. K. Manikanda Prasath, Assistant Professor – II, has been awarded a Certificate of Excellence in Peer - Reviewing by B P International on 27-02-2024.



COLLABORATIVE ACTIVITY



Dr. P. S. Samuel Ratna Kumar, Assistant Professor – III, is a Senior Research Associate - Honorary Post University of Johannesburg, South Africa. He is associated and working with them on a 2-year Project worth Rs. 23 lakhs.

PATENTS

Dr. K. K. Arun, Assistant Professor III, published a patent titled “Exploring the role of machine learning in human addictive behavior prediction among college students in India” bearing application No. 202411002822 A and another patent titled “Deep Learning based Approaches for students performance prediction and education-based outcome improvement” bearing application no. 202411002924 A on 15-01-2024. He is also having granted patent on “Device for Employee Attendance Management” bearing no. 6347712 on 27-02-2024.



Dr. S. Sivakumar, Assistant Professor – III, filed a patent titled “Thermal Management System of LI - ION Battery”.

Dr. A. P. Arun, Assistant Professor – III, **Dr. K. Krishnamoorthi**, Assistant Professor – III, **Dr. S. Ramanathan**, Assistant Professor – III, **Mr. R. S. Mohankumar**, Assistant Professor – II, **Mr. K. Manikanda Prasath**, Assistant Professor – II, **Mr. S. Subbiah**, Assistant Professor – II are having granted patent on “Additive Manufacturing Device” bearing no. 6346754 on 23-02-2024.



PROGRAMMES PARTICIPATED



Dr. C. Velmurugan, Professor, participated in a Seminar on "A conclave on Electric Mobility in Education" on 06-02-2024, organized by Hotel Le Meridian, Coimbatore.

Dr. N. Sangeetha, Senior Associate Professor, participated in an FDP on "Accelerating Autonomous Systems with MATLAB, Simulink, Quanser - case study on Autonomous Vehicles" from 15-02-2024 to 17-02-2024, organized by IOT, Edge & UAV Cohort, Coimbatore.



Dr. A. P. Arun, Assistant Professor III, participated in an FDP on "Tech Fusion Ventures: The Accelerated Path to Entrepreneurship Success" from 29-01-2024 to 23-02-2024, organized by Academy of Maritime Education and Training, deemed to be University, Coimbatore.

Dr. B. N. Sreeharan, Assistant Professor III, participated in a Workshop on "AI Tools in Scientific Writing" from 02-02-2024 to 03-02-2024, organized by KPR Institute of Engineering and Technology, Coimbatore.



Dr. S. Rajesh, Assistant Professor II, participated in an FDP on "EV Battery Technology" from 05-02-2024 to 10-02-2024, organized by Anna University, Birds India Corporation, Coimbatore.

Dr. S. Sivakumar, Assistant Professor III, participated in a Seminar on "Solid Edge University 2024" from 22-02-2024 to 22-02-2024, organized by The Residency Towers, Coimbatore. He also participated in another FDP on "EV Battery Technology" from 05-02-2024 to 10-02-2024, organized by Anna University, Birds India Corporation, Coimbatore.



REVIEWERS



Dr. V. R. Murugantham, Associate Professor, and **Dr. K. K. Arun**, Assistant Professor – III, were certified as reviewers for Advances in Science, Technology and Engineering Systems Journal (ASTESJ).



Department Activities

MOU SIGNED



An MoU related to student project and training was signed with Capgemini Technology Services India Limited, Coimbatore on 10-01-2024. **Dr. M. A. Vinayaga Moorthi**, Assistant Professor – III, coordinated the activity.

INDUSTRIAL VISIT



48 students from the department visited M/s. HIROTEC INDIA, Mopperipalayam, Coimbatore on 12-02-2024. **Dr. S. Ramanathan**, Assistant Professor- III and **Mr. R. S. Mohankumar**, Assistant Professor – II, coordinated the visit.

STUDENT PARTICIPATIONS:



The department of Engineering and architectural studies, ARA institute of canterbury along with Kumaraguru College of Technology is currently working on MG7028 engineering systems analysis – Course and collaborative research projects under the faculty and student exchange program. In this regard, **Mr. A. Varun** from Mechanical engineering department, KCT is nominated to visit the institute at canterbury, New Zealand, to attend the motorsport block course program during 16-01-2024 to 12-02-2024.

Mr. T. Suresh, Research Scholar, participated in CANRUN Marathan 2024 on 04-02-2024 organized by Kongunad Hospitals, Coimbatore.

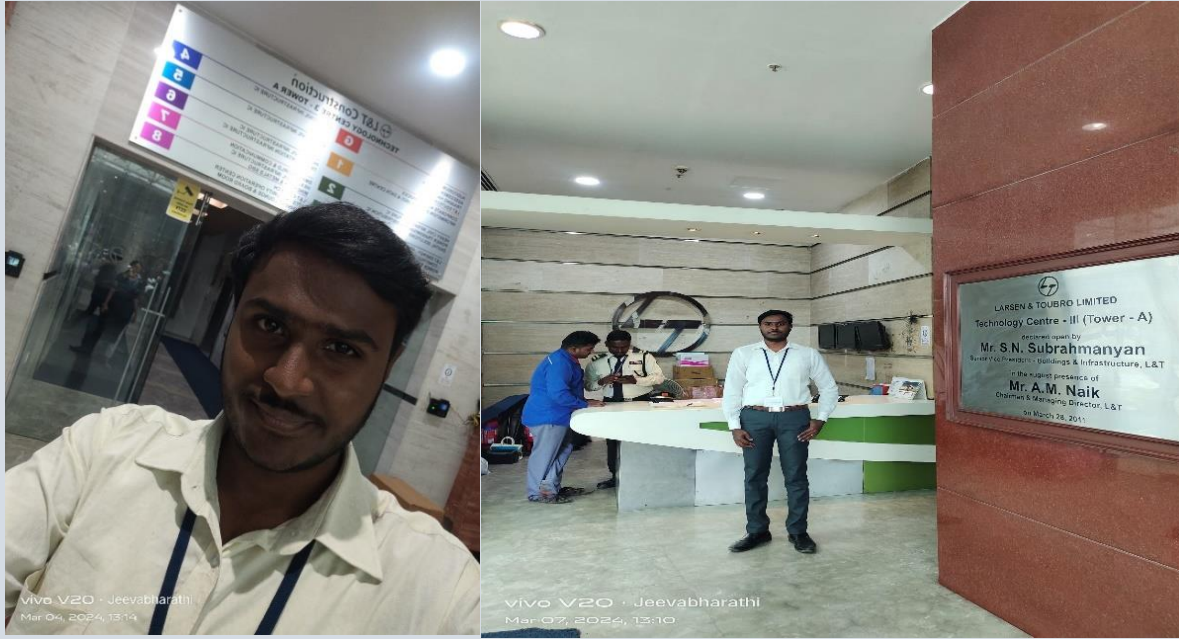
Mr. R. Kumarasamy, Mr. S. L. Vaseekaran, Mr. C. S. Divakar and Mr. R. Sanjay from the department participated in RC Car Racing on 04-01-2024 organized by IIT-Madras.

Student Activities



Ms. M. Nisha, Mr. B. Nitin, Mr. S. Prasin, Ms. S. Priyanka, Ms. S. Santhiya, Mr. J. Surya from second year mechanical engineering department, KCT has completed industry internship for enhancing their professional skills from 16-02-2024 to 23-02-2024 from M/s. Tekson Group Private Limited, Coimbatore.

Student Activities



Mr. K. Jeevabharathi (20BME048) of final year mechanical, KCT has acquired internship in M/s. LARSEN and TOUBRO, Chennai from 19-02-2024 to 18-05-2024.



Mr. R. Lokeshwaran (20BME066), Mr. R. Kumarasamy (20BME065), Mr. T. Manoj kumar (20BME070), Mr. P. V. Harshavarddhan (20BME044) of final year Mechanical Engineering, KCT has acquired Internship opportunity at M/s. Craftsman Automation, Coimbatore with a monthly stipend of Rs. 18,000/- from February 2024 to April 2024.

Student Activities



Mr. S. Kalanidhi from second year mechanical engineering presented a paper in poster presentation event happened at IIT Madras.



Students from third year Mechanical Engineering department participated in RC track event held at PSG College of Technology, Coimbatore.

Following students participated in Electric Two-Wheeler Design Competition by SAEISS at Rajalakshmi Engineering College in Chennai on 17-02-2024 and 18-02-2024.

- Mr. S. Yogesh** 22BME126
- Ms. S. Swetha** 22BME117
- Ms. Sivathiruthani** 22BME102
- Mr. S. Sanjaykumar** 22BME088
- Ms. E. Thiruvazhaji** 22BME120



Mr. S. Harshit (22BME037) and **Mr. S. Aruthra** (22BME013) were the Runner up in the Neural Nectar Event, a Science Quiz Competition based on IoT conducted by Sri Krishna College of Technology, Kovaipudur, Coimbatore on 08-03-2024.



Mr. P. Harish (22BME035), **Mr. A. Merunkumar** (22BME058) received MTA centennial scholarship from BlueStar foundation private limited.



TANCAM Hackathon for Women 2024 held at KIT sponsored by Dassault systems. **Ms. P. Kirubashini** (22BME050), **Ms. V. Kamalikka** (22BME044), **Ms. S. Fathima Nasiha** (22BME025) won special prize of Rs. 10K. Theme: smart agriculture infrastructure; Project: AI-Driven Agro Pricing: Predictive Analytics for Agriculture Commodity Pricing

STUDENT ARTICLE

INTRODUCTION TO THE UAVS



Ms. P. Kirubashini
II Mech. 'A'

In the recent times we have often come across this term UAVs i.e., the Unmanned Aerial Vehicles, or commonly known as drones. Now a days it has become very prevalent across various sectors. This article aims to introduce this advancing technology.

The drone industry has taken off well over the past decade due to the advancements in technology, especially in control systems, miniaturization, and computerization. The UAVs today, are more secure, lightweight, durable, and cost-effective. The applications of UAVs have a wide range including military, economic, recreations, commercial and academic purposes. The UAVs have numerous key advantages like providing access to disaster-stricken areas, rapid mobility, conducting airborne missions and carrying payloads. The UAVs have the ability perform several missions where the human interventions are considered hazardous.



UAVs come in various forms, each tailored to specific requirements. They are classified into fixed-wing, single rotor, fixed-wing hybrid, and multicopter categories, each with unique specifications, size, range, and equipment. Key characteristics including speed, flight time, payload capacity, sensing equipment, software capabilities, range, altitude, controllers, and flight controllers define their operational capabilities.

However, despite their manifold benefits, UAVs also present challenges. Concerns such as data security, path constraints, and battery limitations need to be addressed. Yet, these limitations offer ample scope for further research and innovation. With emerging technologies continuously reshaping the landscape, newer designs and functionalities are continually evolving.



Department of Mechanical Engineering

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 VISION:

To emerge as a centre, that imparts quality higher education through the programme in the field of Mechanical Engineering and to meet the changing needs of the society.

DEPARTMENT MISSION:

The department involves in sustained curricular and co-curricular activities with competent faculty through teaching and research that generates technically capable Mechanical Engineering professionals to serve the society with delight and gratification.

B. E. MECHANICAL ENGINEERING

PROGRAM EDUCATIONAL OUTCOMES (PEO's):

- PEO 1 :** Graduates will take up career in manufacturing and design related disciplines.
- PEO 2 :** Graduates will be involved in the execution of Mechanical Engineering projects.
- PEO 3 :** Graduates will take up educational programme in mastering Mechanical sciences and management studies.

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 the specified needs with appropriate consideration for the public health and safety, and the 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. **Modern 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 society:** Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **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.

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.
- PEO3 :** Graduates would function as educators or researchers in academic institutions.

PROGRAM OUTCOMES (PO's):

- P01 :** An ability to independently carry out research /investigation and development work to solve practical problems.
- P02 :** An ability to write and present a substantial technical report/document.
- P03 :** 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.
- P04 :** Apply knowledge and competencies in manufacturing, analytics, supply chain, quality and engineering management.
- P05 :** Apply principles of industrial engineering to solve problems in industry.
- P06 :** An ability to work as part of interdisciplinary teams, communicate effectively, model and design engineering systems optimally.