

# MExpress

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Mechanical Engineering Department's Official Newsletter

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Mechanical Engineering Association  
Department of Mechanical Engineering  
KUMARAGURU COLLEGE OF TECHNOLOGY



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## CONTENTS

Details	Page No.
Editors' Portfolio	4
Programmes Organized	6
Faculty as Resource Persons	8
Manuscripts Reviewed	9
Book Chapter Publications	9
Consultancy	9
Patents	9
Industrial Linkages	10
Programmes Participated (Faculty)	10
Student Publications	11
Student Achievements	11
Student Participations	12
Student Article	15
Snap Shots	16
Vision, Mission, POs, PSOs and PEOs	25

## From the Editors...

Dear Readers,

We are delighted to present this edition of our departmental newsletter, which captures the outstanding achievements of our faculty and students last month.

We have successfully conducted several insightful programs, with our faculty actively contributing as resource persons at renowned institutions and events. Our faculty's academic contributions continue to grow through their work as manuscript reviewers and authors of book chapters, furthering the reach of their expertise.

Our department has provided consultancy to various industries, and several faculty members have been granted patents, reflecting our innovative spirit and real-world impact. Strong ties with industry have enhanced our research and practical applications, with faculty also actively participating in conferences and workshops.

Our students have excelled in academics and co-curricular activities, publishing papers and participating in various events, making us proud of their accomplishments. This edition also features a thought-provoking student article, along with snapshots capturing memorable moments from departmental activities.

We hope you enjoy reading this update and feel inspired by the hard work and dedication of our department.

Happy Reading!

Warm regards,

**Editors....**



## A Note of Gratitude

As we proudly present the **85<sup>th</sup> issue** of our departmental newsletter, we would like to extend our heartfelt gratitude to everyone who has contributed to its preparation and release. Reaching this milestone is a testament to the unwavering support, dedication, and collaborative spirit of our faculty, staff, students, and alumni.

To the faculty members who have shared their insights, achievements, and valuable feedback, thank you for your continuous support and encouragement. Your contributions have enriched the content and quality of this newsletter.

We would also like to express our appreciation to the students who contributed their time and effort in compiling information, writing articles, and showcasing their creative talents. Your enthusiasm and dedication have been instrumental in making this edition vibrant and engaging.

We thank everyone to the editorial team for their meticulous attention to detail and hard work in bringing this newsletter to life. Your efforts behind the scenes ensure that each issue is presented with professionalism and flair.

Finally, to everyone who participated, supported, and encouraged this endeavor, thank you. This newsletter is a reflection of our collective achievements, and we look forward to many more successful editions in the future.

Warm regards,

**Editors....**





# Departmental Activities

## PROGRAMMES ORGANIZED



A Parent Teacher Meeting was organized on 17-08-2024. **Dr. S. Ramanathan**, Assistant Professor – III coordinated the meeting.



A Pre-Placement Talk was organized to prepare final-year students on 21-08-2024. **Mr. S. Kamalakannan**, Senior Professional, **Capgemini Engineering**, Coimbatore and **Mr. A. G. Rajan**, Senior Professional, **Capgemini Engineering**, Coimbatore were the resource persons. **Dr. M. A. Vinayaga Moorthi**, Assistant Professor – III, coordinated the talk.



## Departmental Activities



A programme on “Study Abroad” was organized in the department on 20-08-2024. **Ms. S. Nagalakshmi** and **Ms. Preetha Peter**, Trainers, **Career Zone** were the resource persons. **Dr. M. Thirumalai Muthukumaran**, Assistant Professor – III, coordinated the programme.



Programme on Preparation for CAT and other management entrance examinations was organized by the department on 22-08-2024. **Mr. Duraibalaji**, Trainer, IMS Coimbatore was the resource person. **Dr. M. Thirumalai Muthukumaran**, Assistant Professor – III, coordinated the programme.





## Departmental Activities



Board of Studies (BOS) meeting for the B.E. Mechanical and M.E. Industrial Engineering programs was conducted on 17-08-2024. **Dr. N. Rajam Ramasamy**, Coimbatore Institute of Technology, **Dr. Pradip Kumar Ray**, Indian Institute of Technology Kharagpur, **Dr. S. Aravindan**, IIT Delhi, **Mr. Rengaraj Saravanakumar**, Capgemini Engineering, **Mr. A. Pradeep Mathew**, Royal Enfield were the board members. **Dr. C. Velmurugan**, Professor and Head coordinated the meeting.



A Guest lecture on Awareness about preparation for CAT Exams was organized in the department on 22-07-2024 and 24-07-2024. **Mr. Vasanthakumar**, Trainer, 2IIM Online CAT Coaching. **Dr. M. Thirumalai Muthukumaran**, Assistant Professor – III, coordinated the guest lecture.



### FACULTY AS RESOURCE PERSON



**Dr. B. N. Sreeharan**, Assistant Professor – III, was the resource person in providing training on “Introduction to Engineering Drawing” for PGDDE Batch of Sakthi Excellence Academy who provides training to onboarding engineers of Cameron India Private Limited during 30-08-2024 and 31-08-2024.



## MANUSCRIPTS REVIEWED



**Dr. K. K. Arun**, Assistant Professor – III, reviewed a manuscript entitled “Applications of Fermatean Uncertainty Weighted Average Aggregation operator to Multiple Attribute Group Decision Making” for the International Journal of Innovative Technology and Exploring Engineering (IJITEE) a SCI indexed journal.

**Dr. V. Manivel Muralidaran**, Assistant Professor – III, reviewed a manuscript entitled, “Synergistically improved strength and ductility in low-cost high entropy alloy induced by Al/C addition”, Emerging Materials Research, a SCI indexed journal.



## BOOK CHAPTER PUBLICATION



**Dr. M. Balaji**, Associate Professor, published a book chapter titled “Comparative Studies on Adoption of Circular Economy Practices Across Indian Manufacturers” for the book entitled ‘Recent Advances in Industrial and Systems Engineering’ published by Springer Nature, pp. 475-484 bearing ISBN 9789819746996.

**Dr. K. M. Senthilkumar**, Associate Professor, published a book chapter titled “Investigation of surface hardness of AISI 316L SS from QPQ complex salt bath treatment process using response surface methodology” for the book entitled ‘Challenges and Opportunities in Industrial and Mechanical Engineering: A Progressive Research Outlook’, published by Taylor & Francis, pp. 1036, ISBN 9781032713229.



## CONSULTANCY



**Dr. R. Manivel**, Professor and **Dr. M. Thirumalai Muthukumar**, Assistant Professor – III, provide a consultancy on “Structural Analysis of Gear Box of Ridge Plaster Machine” and Structural Analysis of Top Arm of Rotary Hay Rake” for M/s. Bull Agro Implements, Ravathur Pirivu, Coimbatore – 641042 for Rs. 42480/-.



## PATENT

**Dr. K. K. Arun**, Assistant Professor – III, published a patent titled “A Smart Natural Fiber Composite with Self-Healing Capabilities and Method Thereof” bearing no. 202441059971 A.



## INDUSTRIAL LINKAGES



On 16-08-2024 an industrial linkage was initiated to M/s. AGRONE Coir Industry, Pollachi with respect to student project and consultancy works. **Dr. M. Balaji**, Associate Professor, coordinated the initiation process.

### Programmes Participated (Faculty)

**Mr. P. D. Devan**, Assistant Professor - II, participated and completed a 2-day certified training programme on "Industrial parts design using sheet metal in SolidWorks" on 16-08-2024, organized by SKYY Skill Academy.



**Dr. K. K. Arun**, Assistant Professor - III, completed an online course on "The Science of the Solar System" on 30-08-2024 conducted by Caltech – Coursera.

# Departmental Activities



**Dr. B. N. Sreeharan**, Assistant Professor - III, completed an online course on Quizziz AI to engage and empower every learner in the classroom on 16-08-2024 conducted by Quizizz. He further completed another online course on "Data analysis: visualisations in Excel" on 25-08-2024 conducted by OpenLearn. Also Dr. Sreeharan, participated in an FDP on "Modern Trends in Manufacturing Process" from 05-08-2024 to 10-08-2024, organized by Easwari Engineering College, Chennai.

## STUDENT PUBLICATIONS

**Mr. U. Suriya Prakash**, 22BME114, published a paper entitled "A Comparative study on human space flights over robotic space missions and habitation involved in the human space mission" in Acceleron Aerospace Journal, Volume 3, Issue 2, pp (446-450), E-ISSN- 2583-9942, DOI: 10.61359/11.2106-2440.

## STUDENT ACHIEVEMENTS

**Mr. U. Suriya Prakash**, 22BME114, successfully completed the pre-final round of the International Astronomy and Astrophysics Competition of 2024 and qualified for the final round on 10-06-2024. And he won the **gold honour** for participating in the final round by scoring 19 points out of 20 points and placed among the top 3% of all participants.



**Mr. R. Aswin**, 21BME014 won the **Gold Medal** and **Mr. G. Sreeram**, 22BME105 won the **silver medal** in the Senior Wushu State match held at Sri Dharamchand Jain School on 22-06-2024 and 23-06-2024.





On August 14th, the Coimbatore City Police received a trike vehicle developed by Elaicle, led by Mr. S. Shakeel Akthar, Alumni and their dedicated team members. The trike was officially launched by the Coimbatore City Commissioner at the Racecourse to enhance the mobility, efficiency, and surveillance capabilities of the police force in crowded areas. The event was attended by **Mr. Jai Harish, Mr. Ajmal Batcha, Mr. Hareeshkanth, Mr. Dhanush, Mr. Melavasal Pandian and Ms. Abirami** from the department.

An article about our students' invention on "Cooker Handle Locking Mechanism" was published in Om Shakthi Magazine August 2024 issue. The mechanism was invented by **Mr. M. Goutham, Mr. C. V. Saigugan, Mr. S. Sathishkumar** of final year and guided by Dr. M. A. Vinayagamoorthi, Assistant Professor - III. The same was applied for patent.

### STUDENT PARTICIPATIONS

**Mr. T. K. Sri Yashwanth**, 23BME090, completed two days certified program on "Industrial parts design using sheet metal in SolidWorks", conducted by SKYY Skill Academy on 16th august, 2024.

**Mr. K. Praveen**, 23BME073 had participated in 'VIVID VOICES' conducted by the RRC club of KCT on August 26th to August 29th, 2024.

**Ms. V. Kamalikka**, 22BME044, won the Kalpana Chawla Award and **Ms. Snehaa Seniappan**, 23BME087, won the Best Ambassador award in KRC Conducted by Academy of Indigenous Motor Sports held from 19-08-2024 to 22-08-2024 at Hindustan College of Engineering and Technology and COASTT High Performance Centre.



## Departmental Activities



**Mr. U. Suriya Prakash, 22BME114,** involved in hosting Telescope session on 19-08-2024 as a part of Kumaraguru Space club.



**Mr. U. Suriya Prakash, 22BME114,** involved in organizing a School – Outreach event on “First national space day – Touching lives while touching the moon – India’s Space saga” on 23-08-2024 at Bharatiya Vidya Bhavan CBSE, Vadavalli.

## Departmental Activities



1. ABDUL RAZAK J -23BME001
2. ASHWINKUMAR S S -23BME010
3. HARE KRISHNAN G R -23BME029
4. HARISH KUMAR S-23BME034
5. HARITH S-23BME036
6. PRANESH S P-23BME070
7. PRASANNA S M -23BME072
8. RAGHAV A - 23BME076
9. RITIK R G-23BME079
10. SNEHAA SENNIAPPAN - 23BME087
11. VARSHITH D - 23BME098
12. KAMALIKKA V - 22BME044
13. HARSATH R - 22BME036
14. VIKKRAM L K - 22BME124
15. DEV ANAND M - 22BME019
16. VISHNU A - 22BME129
17. NAVEEN MURUGESH T - 22BME066
18. PRATEESH HARIHARAN G - 22BME075

Above students participated in KRC Conducted by Academy of Indigenous Motor Sports held from 19-08-2024 to 22-08-2024 at Hindustan College of Engineering and Technology and COASTT High Performance Centre. They participated under EV and IC category and won 21 awards under several category including 2 overall championships.





## STUDENT ARTICLE



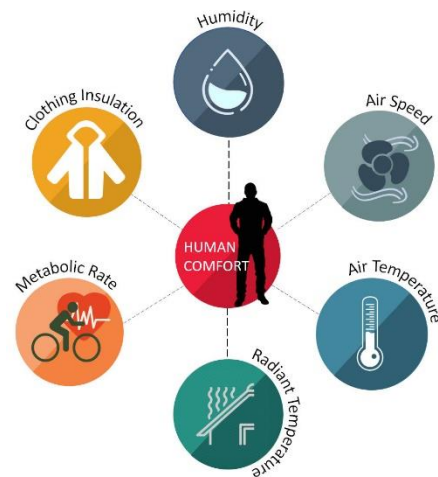
### Thermal Discomfort in closed rooms

M. Kesavdarshan, 22BME048

Unpredictable climatic changes forced researchers and geologists to work on thermal comfort for humans. Since HVAC plays a pivotal role in controlling the temperature of the surroundings, it serves as a key to controlling the atmospheric thermal nature. In sectors like manufacturing, welding, foundries and metalworking, and food processing, the thermal discomfort is significant. This discomfort might lead to several human errors which may cause severe consequences. For example, in the US, a Career Builder survey found that around 53% of employees were unhappy with their workplace temperature.

The HVAC system is comprised of devices or systems that work on the principles of basic thermodynamic laws like Zeroth law, First law, Second law, Third law, Fourth Law of thermodynamics or Charle's Law, Ideal gas law, etc.

For humans heat discomfort is a form of mental state, that is dependent on their psychological conditions, said Fanger. Hence this discomfort shall be reduced by optimizing HVAC systems by various methods, by retrofitting the materials of walls, adjusting the positions of dents, vents, and so on. Computational fluid dynamics can be used to identify the most efficient method.



There are several standards which determine thermal discomfort of humans like ASHRAE 55. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers established the ASHRAE 55 Standard, an essential protocol for ensuring thermal comfort in interior spaces. When people are comfortable with the temperature in their surroundings, they are said to be in a thermal comfort condition. To satisfy the demands of building occupants for thermal comfort, HVAC (heating, ventilation, and air conditioning) systems are evaluated and designed using this standard.

Comfortable indoor environments in homes, workplaces, schools, and other facilities are designed and maintained with the help of the ASHRAE 55 standard. Adherence to this criterion contributes to increased well-being and productivity in addition to improving resident satisfaction. Additionally, ASHRAE 55-compliant energy-efficient designs lessen the heating and cooling systems' adverse impacts on the environment, promoting sustainability.

The ASHRAE guidelines recommend 68 F to 74 F in the winter and 72 F to 80 F in the summer. The ASHRAE guidelines recommend a relative humidity (RH) of 30 to 60 percent.

## SNAPSHOTS



Dr. N. Sangeetha @ Parents Teaching Meeting



Mr. Prabhu @ Parents Teaching Meeting



Dr. Ayyppan @ Parents Teaching Meeting



## Departmental Activities



Dr. Karuppusamy @ Parents Teaching Meeting



Mr. Mohankumar @ Parents Teaching Meeting



Dr. Thirumurugaveerakumar @ Parents Teaching Meeting

## Departmental Activities



Dr. Thirumalaimuthukumaran @ Parents Teaching Meeting



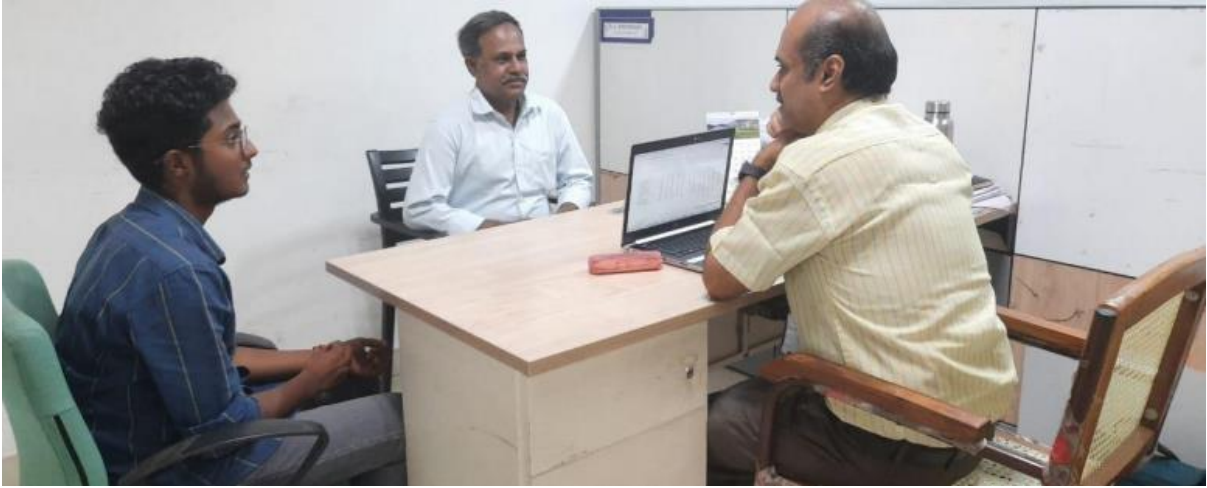
Dr. Sivakumar @ Parents Teaching Meeting



Mr. Sivakumar @ Parents Teaching Meeting



## Departmental Activities



Dr. Sreeharan @ Parents Teaching Meeting



Mr. Devan @ Parents Teaching Meeting



Dr. Ramanathan @ Parents Teaching Meeting

## Departmental Activities



Mr. Rajan, Senior Professional, Capgemini Engineering @ Pre-placement Talk



Study Abroad Programme



## Departmental Activities



Dr. Sreeharan as Resource Person @ Sakthi Excellence Academy



Guest Lecture on CAT preparation

## Departmental Activities



Dr. M. Balaji @ M/s. AGRONE Coir Industry, Pollachi



Our students @ KRC Event



# Departmental Activities



Mr. Suriya Prakash @ First National Space Day



Trike team with JC Sir and Principals of KCT and KCLAS





**KUMARAGURU**  
college of technology

COIMBATORE – 641 049

## 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. **Engineering 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. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
8. **Individual and 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, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
10. **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.
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.

## 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.