St. JOSEPH'S
INSTITUTE OF TECHNOLOGY
An Autonomous Institution, Affiliated to Anna University

DEPARTMENT OF
MECHANICAL ENGINEERING

BEACON

APRIL 2025

Editorial Board
Dr.D.Elil Raja, Prof & Head-Mech
Dr.D.Arthur Jebastine Sunderraj, AP, Mech

MESSAGE

Dr. B. Babu Manoharan.,M.A., M.B.A., Ph.D., (Chairman)

"It gives me great pride to credit the staff and students of the Department of Mechanical Engineering, St. Joseph's Institute of Technology, for the excellent newsletter 'BEACON.' This publication highlights the active merits and milestones accomplished by the college. I sincerely hope these efforts help unleash their hidden potentials, paving the way for future success."

Mr. B. Shashi Sekar.,M.Sc., (Managing Director)

"I am very happy that our institution presents its activities marvelously through 'BEACON.' I am sure this newsletter will further enhance academic engagement. I congratulate the staff and students of the Department of Mechanical Engineering for their excellent effort. May 'BEACON' continue to be a great success."

Mrs. S. Jessie Priya.,M.Com., (Executive Director)

"BEACON,' true to its name, is bold in its content. It gives me immense delight to see the exceptional talent of the Mechanical Engineering students at St. Joseph's Institute of Technology. I congratulate the team for creating this newsletter—a true road to success."

Dr. S. Arivazhagan.,M.E., Ph.D., (Principal)

"I applaud everyone involved in creating 'BEACON' from the Department of Mechanical Engineering. The team's tenacity in crafting innovative and informative ideas into this newsletter is commendable. I believe this effort will bring them even greater achievements."

Dr. G. Sreekumar.,M.Sc., M.Tech., Ph.D (Dean & Academic Coordinator)

"The 'BEACON' newsletter stands as a shining example of excellence from the Department of Mechanical Engineering. It reflects the unwavering commitment and creativity of its team. I commend each contributor for making this publication informative and engaging—it is sure to earn widespread acclaim."

Dr. D. Elil Raja, M.E.,Ph.D., Head of the Department, Mechanical Engineering

"It is with immense pride that I commend the tireless efforts of our students and faculty in bringing 'BEACON' to life. This newsletter not only reflects the technical brilliance of our department but also the creativity and dedication of our team. May 'BEACON' continue to illuminate the achievements of our institution and inspire future generations of engineers. Together, we are shaping a legacy of excellence."

VISION OF THE INSTITUTION

- To be a centre of excellence for Education, Innovation and Research in Engineering, Technology and Management and to encourage Entrepreneurship with ethical and professional standards to benefit the society at large.

MISSION OF THE INSTITUTION

- To create a better learning environment to produce competent and innovative professionals with sound technical knowledge and management skills.

- To instill ethical and social values among the students to contribute to the global technological and socio-economic development.

- To inculcate qualities of leadership and entrepreneurship in students to improve their employability and achieve sustained placement through campus interviews.

- To provide opportunities and resources through consistent Industry-Institute Interaction for Research and Development in the emerging fields.

VISION OF THE DEPARTMENT

- To provide knowledge centered education and prepare students for meeting global mechanical engineering challenges thereby enabling them to contribute for the prosperity of the society.

MISSION OF THE DEPARTMENT

- To impart strong technical skills and fundamentals in Mechanical Engineering, through effective teaching and learning methodologies.

- To create an environment conducive for research and development by developing partnerships between academia and industry.

- To cultivate leadership qualities, ethical values, creativity and lifelong learning culture in order to prepare our graduates into a successful professionals.

- To foster knowledge on emerging technologies in interdisciplinary domains inorder to pursue a sustained professional career.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

- To provide a strong foundation in science, engineering and computational fundamentals for designing, formulating, solving, and analyzing real-time mechanical engineering problems.
- To inculcate the skills to develop core competency through research and development inorder to compete the ever-changing endeavors in their professional career.
- To nurture leadership abilities, teamwork, and ethical values to fulfill the needs of the society and environment while demonstrating their professional abilities.
- To encourage multidisciplinary learning approach to foster advanced technologies for their successful professional career.

PROGRAM OUTCOMES (PO)

Engineering graduates will be able to:

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 solution for complex engineering problems and design systems components or process 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 the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7.Environmental 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 team work: 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.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO 1: Ability to apply industrial standards to design, model and analyze machine elements and systems using modelling and analysis tools

PSO 2: Ability to apply knowledge in various process of manufacturing, thermal and industrial engineering to fabricate diverse engineering components inorder to solve engineering problems.

CONTENTS

STUDENTS INTERNSHIP

Our Mechanical Department and Electrical Engineering has successfully organized a Summer Internship Program for School students from April 1 to 5, 2025, in partnership with Goodwin Motors. 183 Students from 12 different schools in and around Chennai have participated in this internship. This initiative provided students with hands-on experience and industry exposure, aligning with the institution's mission to shape disciplined and skilled professionals.

Certified by Goodwin Motors, the program underscored the institute's commitment to bridging academia and industry.

CONFERENCE CONDUCTED

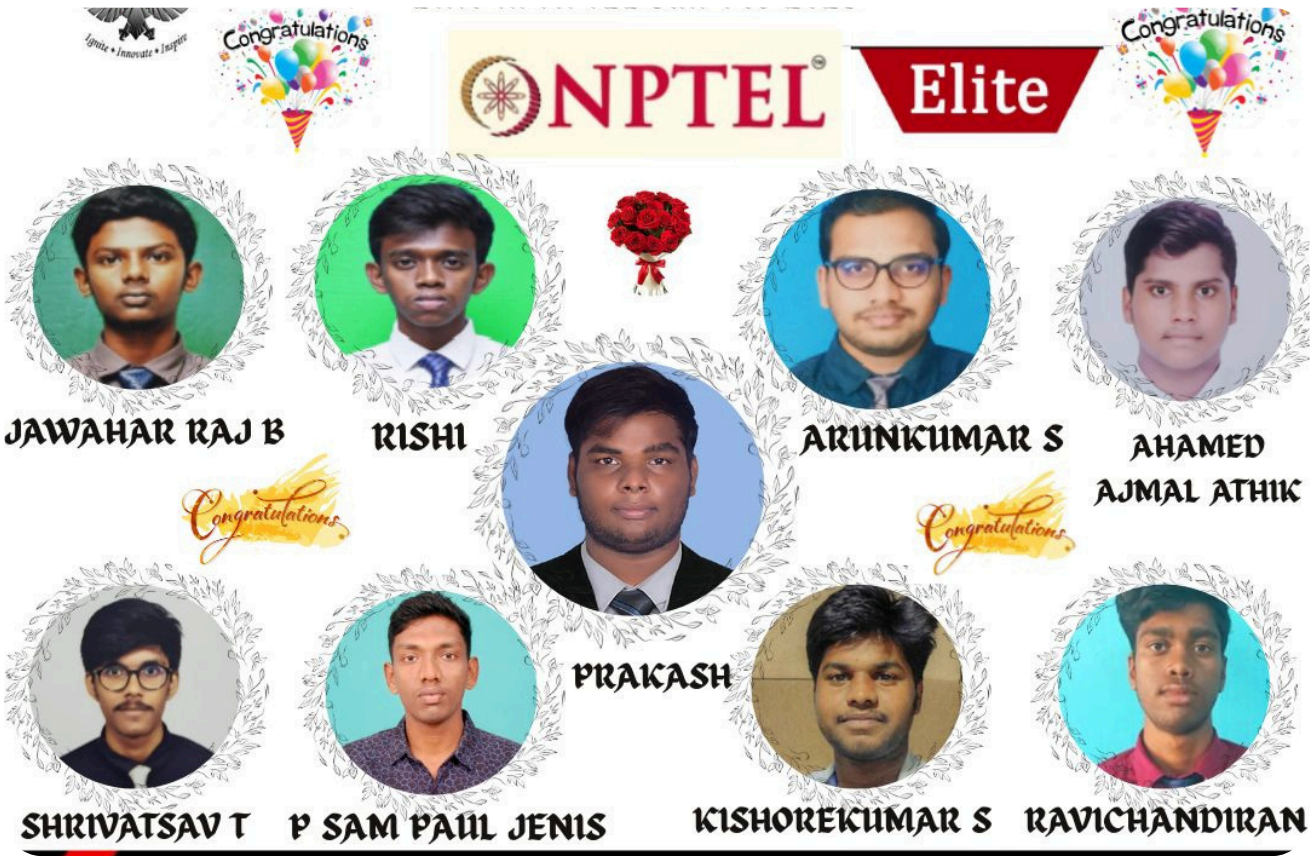
ICRMSME 2025

The Mechanical Department has successfully organized the International Conference on Recent Trends in Materials Science & Mechanical Engineering (ICRMSME 2025) on 25th–26th April 2025, bringing together academicians, industry experts, and researchers to discuss advancements in the field. The event featured keynote addresses by Mr. Senthil Ramakrishnan (Renault Nissan), who highlighted opportunities for women in engineering, and Dr. A. Arockiyarajan (IIT Madras), who encouraged students to explore careers beyond regional limits, along with insights from Dr. Taha Cagri Senocak (Atatürk University, Turkey). Over 100 research papers were accepted for publication in AIP Conference Proceedings, with 55 presented orally across 11 technical sessions. The conference, inaugurated with a traditional Kuthu Vilakku lighting ceremony, was led by Dr. D. Elli Raja (HOD) under the guidance of Dr. S. Arivazhagan (Principal) and concluded with a valedictory function, marking a significant step in fostering innovation and collaboration in mechanical engineering and materials science.


St. JOSEPH'S
INSTITUTE OF TECHNOLOGY
AIP
INTERNATIONAL CONFERENCE ON
Recent Trends in
MECHANICAL


MECHANICA

NPTEL TOPPERS



STAFF ACHIVEMENT

Sathish Kumar A assistant Professor of the Department of Mechanical Engineering, has successfully completed the NPTEL online certification course on "Inspection and Quality Control in Manufacturing," conducted by the IIT Roorkee. He excelled with a consolidated score of 79%, securing full marks in the assignments (25/25) and demonstrating strong proficiency in the exam (54/75). This accomplishment highlights Sathish's dedication to advancing his expertise in manufacturing quality control.

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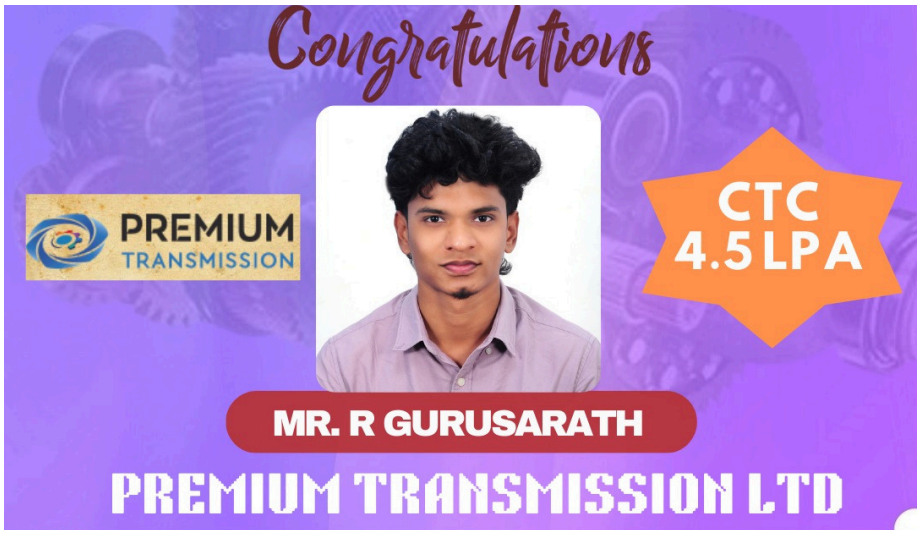
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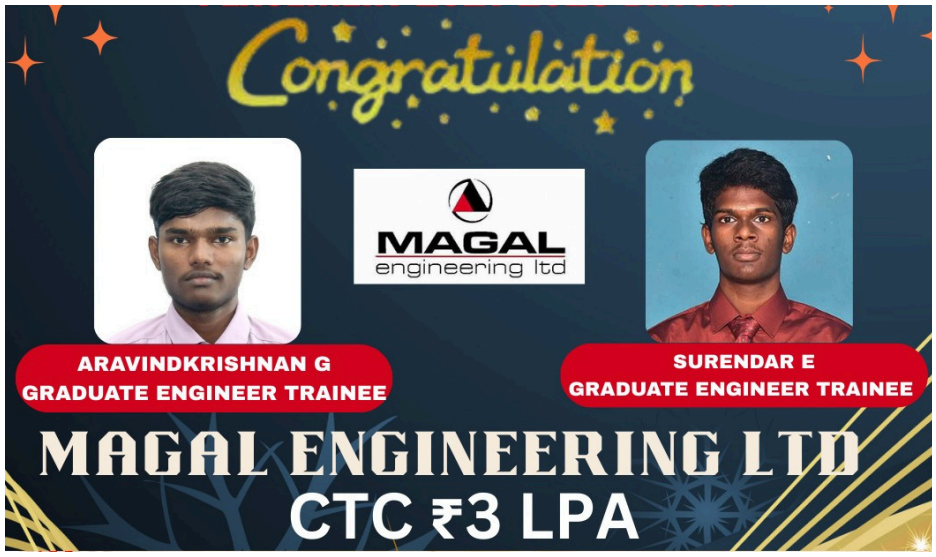
PLACEMENTS



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Dr. D. Arthur Jebastine Sunderraj, a faculty member from the Department of Mechanical Engineering was invited as a guest speaker for a one-day workshop. The workshop, titled "Eco Friendly and Sustainable Electronics," was held on April 8th, 2025, at SSN College of Engineering, Chennai.

PROFESSIONAL SOCIETY ACTIVITIES

The "Mavericks," a talented team from the Department of Mechanical Engineering, has secured the second prize in the prestigious national-level 'Autonomous drone development competition - ADDC 2025'. Their innovative 'Best payload dropping system' impressed judges at the event held on April 4th and 5th, 2025, organized by SAE India at KCG College of Technology. This achievement highlights the team's dedication and technical prowess, bringing recognition to their institution. The team members, including Jawahar Raj B, Shrivatsav T, Mohamed Juma Athari C, Sanjai Lenin S, Hari Haran P, Nininmon Roy T, A Anshek Robert, and Frejoy S, along with their faculty mentor Dr. J. Immanuel Durai Raj, are to be commended for this remarkable accomplishment.

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Elil Raja D, Prathap Singh S, Praveen Barmavatu, Prasanth M A, Anandu A P, Ashwin Prabhu G, Rani S, Keerthan S & Mahesh S. Valorization of Pongamia pinnata and Calophyllum inophyllum oils for sustainable biolubricant applications through chemical modification and blending. Biomass Conv. Bioref. (2025). https://doi.org/10.1007/s13399-025-06879-w

Dr. J.Immanuel Durai Raj recently reviewed a manuscript titled "Eco-Friendly Utilization of Recycled Non-Metallic PCB Powder in Polypropylene Composites: Effect of Compatibilizer" for the Iranian Polymer Journal. The editorial team, led by Prof. M.H.R. Ghoretshy, expressed gratitude for his contribution and provided instructions for accessing review comments and decision letters via the Editorial Manager platform.

Shikalgar Niyaj Dilavar, Ashwin Sailesh, Manas Ranjan Sahoo, DVSSSV Prasad, K. Suresh Kumar, M Vamsi Krishna, R. Anandkumar, Murali. D, G. Nalinashini. Enhancing Mechanical Properties by Parameter Optimization in Fiber and Particle Reinforced Composites. Journal of Polymer and Composites. 2025; 13(02):75-85.