St. JOSEPH'S INSTITUTE OF TECHNOLOGY

An Autonomous Institution, Affiliated to Anna University

DEPARTMENT OF MECHANICAL ENGINEERING

BEACON

August 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

GUEST LECTURE ON MANAGING SELF

The Department of Mechanical Engineering, St. Joseph’s Institute of Technology, in association with IEI INDIA (Institution Engineers of India), organized a guest lecture titled "Managing Self" on August 7, 2025. The event featured Mrs. Yamini R, a life skills trainer, as the expert speaker. It was held in the Library Conference Hall from 11:30 AM to 12:30 PM, focusing on personal development and self-management skills for students.

GUEST LECTURE ON INDUSTRY 5.0

The Department of Mechanical Engineering, in collaboration with SAEINDIA (St. Joseph's Collegiate Club), hosted a guest lecture on "Industry 5.0: Collaboration Between Humans and Machines." The speaker, Mr. Vennimaal Murugan (Project Manager, TCS), discussed emerging trends and the future role of mechanical engineers in human-machine synergy.

ALUMNI TALK

MR. ABINO ROBILIN, A DECISION SCIENTIST AT MU SIGMA AND AN ALUMNUS OF THE 2019-2023 BATCH

On August 10, 2025, the Department of Mechanical Engineering hosted a pre-placement talk for the 2022-2026 batch of final-year Mechanical Engineering students as part of the Mu Sigma placement drive. The session, held from 11:00 AM to 11:45 AM, featured Mr. Abino Robilin, a Decision Scientist at Mu Sigma and an alumnus of the 2019-2023 batch. The event aimed to guide and motivate students as they prepare for their careers. The talk highlighted the opportunities and expectations at Mu Sigma, offering valuable insights to help students shine in the competitive job market.

VIBIN ROY C
COGNIZANT
ASSOCIATE DATA ENGINEER
2018- 22 BATCH

Department of Mechanical Engineering conducted a Alumni talk by Mr. C. Vibin Roy, alumnus of the 2018–2022 batch and currently working in Cognizant as an Associate Data Engineer, conducted an online session on ‘Step Into Your Future: Placement Preparation for Cognizant Drive’ on 21st August from 6 30pm to 7.30 pm and shared valuable insights with the final year students to support their placement preparation.

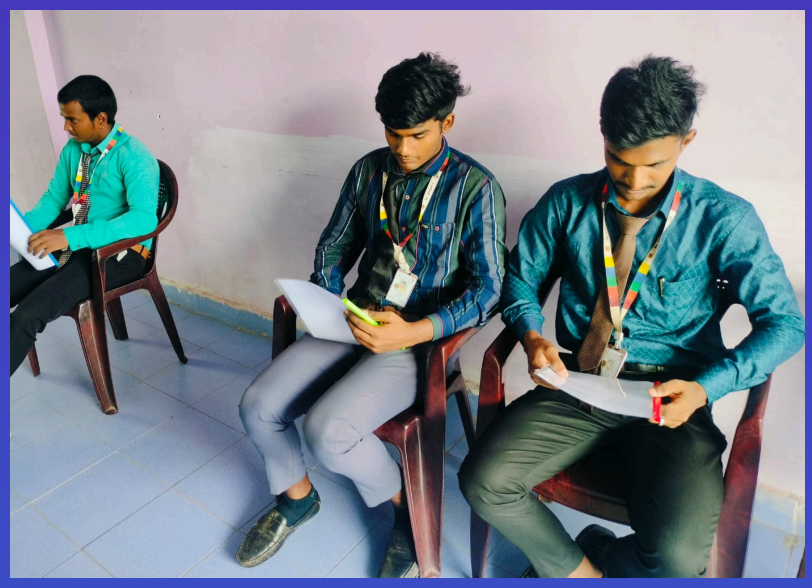
MOCK INTERVIEW SESSION BY ALUMNI

The Department of Mechanical Engineering organized a mock interview session on August 2, 2025 (9:00 AM – 1:00 PM) for final-year students, led by distinguished alumni:

· Paventhan P (Senior Operations Analyst, ZERONORTH)

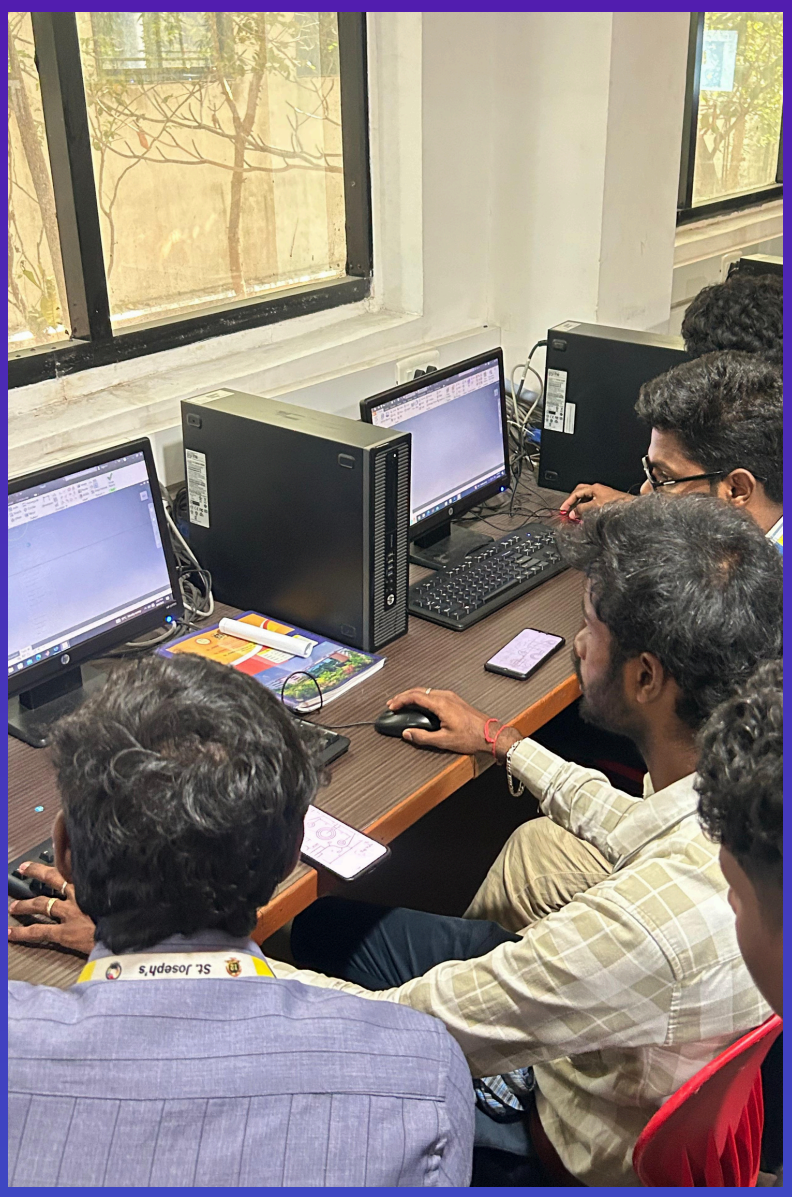
· Nitin Surya R (Product Development Engineer, GRUNDFOS)

The session aimed to prepare students for real-world job interviews and improve their employability skills.



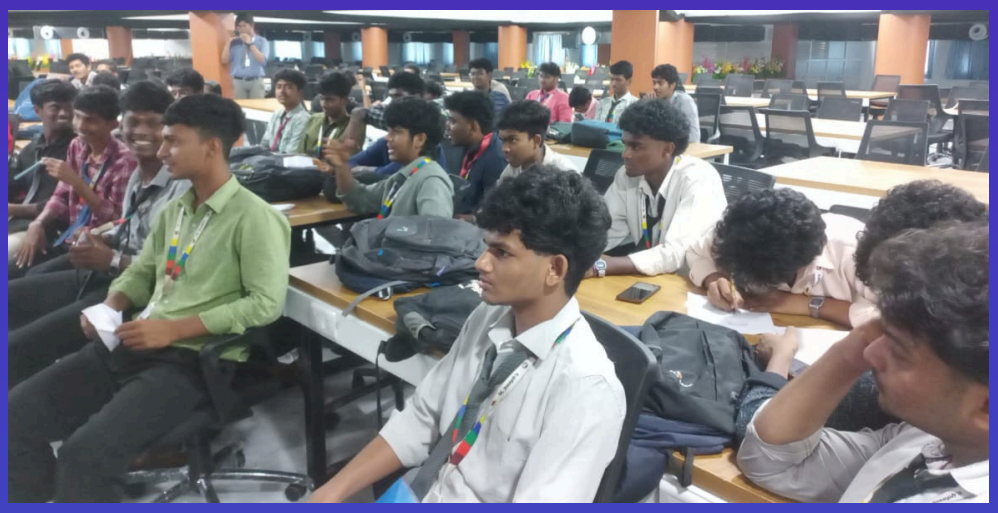
STUDENT WORKSHOP ON DIGITAL PROTOTYPE

The Department of Mechanical Engineering at St. Joseph's Institute of Technology hosted a student workshop on "Digital Prototype" on August 5–6, 2025. The workshop, held in the CAD Lab, featured Pavithran P, Managing Director of Petricore Technologies Pvt Ltd, as the keynote speaker. The event aimed to enhance students' skills in digital prototyping and innovation.



STUDENT WORKSHOP ON ROBOTICS

The Department of Mechanical Engineering organized a student workshop on "Robotics" on August 5–6, 2025. The event featured Sowmiya Santhanam, Founder & CEO of Seventh Sense School of Robotics, and Keerthik Kumar S, Founder & CEO of Technovation, as speakers. The workshop aimed to introduce students to advancements and applications in robotics.



STUDENTS ACHIVEMENTS

Hari Haran P IV Year Mechanical student has presented a paper titled "An Explainable AI Framework for Detecting Misinformation in Social Media Texts using NLP-based Semantic Feature Extraction" at the 3rd International Conference on Sustainable Computing and Data Communication Systems (ICSCDS-2025). The conference was held from August 6–8, 2025, at Erode Sengunthar Engineering College, Erode, Tamil Nadu.

Tirumalazagan V, a student from the 2023–27 batch of the Department of Mechanical Engineering, secured an internship at Rane (Madras) Limited, Pondicherry. The internship offered a stipend of Rs. 10,000 and provided hands-on industry experience.

STUDENTS ACHIVEMENTS

Pragadeep S, Sivakumar V, and Hari Haran P, students of the Department of Mechanical Engineering, St. Joseph's Institute of Technology, participated in the National Level Project Competition 2K25 organized by the Department of Mechanical Engineering, Velammal Institute of Technology, on 22nd August 2025. They secured the Second Prize and received a cash award of **₹3000** for their project.

NGO VISIT

The Department of Mechanical Engineering at St. Joseph's Institute of Technology organized an NGO visit for second-year students to Sakthi Atharavu Illam in Maduravoyal, Chennai. The visit, themed "Give your hands to serve and your hearts to love," emphasized community service and social responsibility.

STAFF ACHIEVEMENT

Mr.S.A.Muhammed Abraar, an Assistant Professor of the Department of Mechanical Engineering, successfully presented a paper titled "Optimized Machine Learning Framework for Pediatric Appendicitis Diagnosis using Multi-Stage Feature Selection" at the 6th International Conference on Inventive Research in Computing Applications (ICIRCA 2025). The conference was held from June 25–27, 2025, at RVS College of Engineering and Technology, Coimbatore. The paper proposed a hybrid machine learning model achieving high accuracy (98.90%) and precision (97.85%) in diagnosing pediatric appendicitis.

Mr. K. Narayanamoorthy and **Mr.D.Murali** from the Department of Mechanical Engineering has participated in a 7-day online Faculty Development Program titled "Navigating Research Methodologies: A Roadmap for Researchers (From Data Collection to Interpretation)." The program, organized by Digi Skill Development Centre & Training Institute, Mumbai, was held from July 16–22, 2025, and aimed at enhancing research skills among faculty members.

STAFF ACHIEVEMENT

Dr. J. Immanuel DuraiRaj Received best paper presented in the title " An optimized Hybrid MPCNN model using termite alate algorithm for enhancing FDM 3D Printing parameters in multi-material fabrication" at "NMITCON-2025 conference on 1st & 2nd August, 2025. in 3rd IEEE International Conference on Networks, Multimedia, and Information Technology (NMITCON), organized by the IEEE Bangalore Section in association with Nitte Meenakshi Institute of Technology, Bengaluru.

Mr. K. Narayanamoorthy, Assistant Professor, Department of Mechanical Engineering, has completed the Fusion 360 Workshop course. The certificate, issued by Autodesk Authorized Training Center USAM Technology Sol. Pvt. Ltd., The program, which took place from July 24, 2025, and lasted for 9-16 hours, focused on the Fusion 360 Cloud product.

Elumalai Arulkumar, R. Kalpana Manivannan, Gopinath Dhamodaran, **Ramesh Krishnan**, CuO@α-Fe2O3 nanocomposite via one-pot synthesis for multifunctional photocatalytic, optoelectronic and antimicrobial
Applications, Journal of Sol-Gel Science and Technology, (2025). https://doi.org/10.1007/s10971-025-06851-0

STAFF ACHIEVEMENT

Immanuel Durai Raj, **Arivazhagan, Prabhuram.T, Sibi silvesta. J**, Experimental Investigation of Mechanical and Water Absorption Properties of Waste Cassette Disc Powder as A Filler in Woven Natural Fiber Composites, International Journal of Environmental Sciences, Vol. 11, No. 14(s), 1042-1047 (2025). https://doi.org/10.64252/8rteen62

Ramesh Vellaichamy, Pugazhenthi Rajagopal, A. Geetha Selvarani, Itha Veeranjaneyulu, **J. Immanuel Durai Raj**, E. Balaji, Mamdooh Alwetaishi, S. Baskar, Krishna Moorthy Sivalingam, P. V. Elumalai, Investigation mechanical properties and on surface roughness during WEDM machining of nano Cr2C3-MoS2 hybrid metal matrix composites, scientific reports, Vol. 15, Article number: 28230 (2025). https://doi.org/10.1038/s41598-025-08309-3

Mr Muhammed Abraar S.A, Assistant Professor, Department of Mechanical Engineering, has attended One Week Online Faculty Development Program on "Sustainable Construction Practices in Civil Engineering" conducted during July 28th 2025, to Aug 1" 2025 organized by Department of Civil Engineering, Faculty of Engineering and Technology, SRM University Delhi-NCR, Sonepat (Haryana), India.

STAFF ACHIEVEMENT

Muhammad Abraar S A, Assistant Professor, Department of Mechanical Engineering, has filed a patent with application 202541073785, filed on August 3, 2025, by a team of eight inventors including Mohamaj, J. Senthil, and Muhammad Abraar S A, details an "Intelligent Waste Segregation Machine Using Multi-Spectral Vision and Neural Filtering." This innovation in the field of computer science aims to revolutionize waste management by employing advanced multi-spectral imaging and AI-driven neural networks to automatically classify and separate waste materials. As of its latest status, the application has been published and is currently awaiting a formal request for examination by the Indian Patent Office.

Dr. D. Arthur Jebastine Sunderraj, Assistant Professor at St. Joseph’s Institute of Technology, has successfully completed an AICTE Training and Learning (ATAL) Academy Faculty Development Program on Autonomous Robotics and IoT: Transforming Smart Manufacturing in Industry 4.0. The program was hosted by JNN Institute of Engineering from August 18 to 23, 2025.

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