ISSUE: 1 | VOLUME: 4 | YEAR: 2023-24

St. XAVIER'S CATHOLIC COLLEGE OF ENGINEERING (Autonomous)

Chunkankadai, Nagercoil - 629003
Kanyakumari District, Tamil Nadu

Approved by AICTE & Affiliated to Anna University, Chennai
Accredited with 'A' Grade by NAAC
UG Programs(ECE, EEE, Mech, Civil, CSE & IT) Accredited by NBA
Anna University Recognized Research Institute
Recognized under section 2(f) & 12(B) of UGC Act, 1956
UG Programs(ECE, EEE, Mech, Civil, CSE & IT),
MBA & MCA Programs Permanently Affiliated

News Letter

Department of Mechanical Engineering

"The object of education is to prepare the young to educate themselves throughout their lives."

Department Vision

Developing technically sound mechanical engineering professionals to serve the global community with academic excellence and innovative research

Department Mission

M 1 To transform the students into mechanical technocrats with clear conceptual understanding and hands-on experience

M 2 To integrate the fundamentals with recent concepts through technical gatherings, research and industry interactions

M 3 To impart managerial quality and develop soft skills through leadership and personality development programs

M 4 To inculcate core human values through ethical practices and inspire them to serve the society

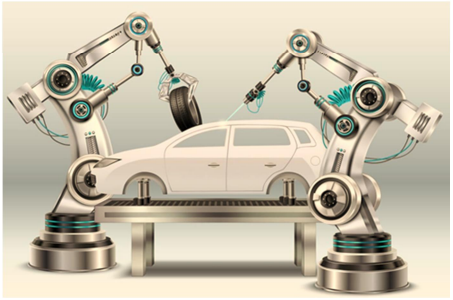
HoD's Message

Dear Students, Faculty, and Readers,

I am delighted to present this edition of our departmental newsletter, showcasing the remarkable achievements, activities, and contributions of our faculty and students over the past months. Our department continues to strive for academic excellence, research innovation, and professional development, as reflected in the various seminars, workshops, and events organized.

The commitment of our faculty members to knowledge sharing and research has been evident in their roles as resource persons, keynote speakers, and judges in numerous prestigious events. Our students have also actively participated in technical programs, industrial visits, and competitions, broadening their practical knowledge and industry exposure.

As we step forward, I encourage everyone to continue their journey of learning, innovation, and collaboration. Let us work together to uphold the values of excellence and integrity in our field, contributing to both academia and industry.



ABOUT THE DEPARTMENT

The Department of Mechanical Engineering, established in 2003, offers undergraduate and postgraduate programs, with a strong emphasis on research, innovation, and industry collaboration. Student associations like MEGX, ISTE, SAE, and ISHRAE actively promote professional development through workshops and industry interactions, while the Energy Club leads renewable energy initiatives and energy audits. Accredited by the NBA and granted autonomous status, the department maintains academic excellence by continuously evolving its curriculum to meet industry demands, ensuring students gain practical skills and exposure to emerging technologies.

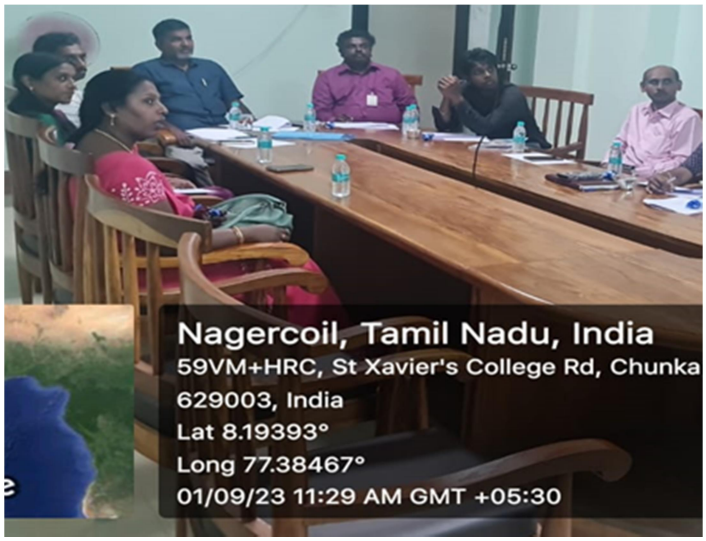
Editors

Dr. G. Antony Miraculas
Dr. Y. Balto
Mr. Vishaal V (IV Mech.)
Mr. Jaya Anto J (II M.E., Energy)

Faculty Engagements and Contributions

Dr. G. Antony Miraculas, Associate Professor and Head of the Department of Mechanical Engineering, served as the Chairperson for the International Conference on "Recent Trends in Engineering, Technology, and Management (ICRTETM-2K23)" held at Stella Mary's College of Engineering on 15.09.2023.

Dr. M. Antony Foster Raj, Assistant Professor in the Department of Mechanical Engineering, was a member of the expert panel for evaluating idea proposals at Idea Hackathon 3.0 (for women), hosted by MSME on 1st and 2nd September 2023 at St. Xavier's Catholic College of Engineering



Dr. M. Antony Foster Raj, Assistant Professor in the Department of Mechanical Engineering, served as a resource person for an Engineering Graphics Seminar at Stella Mary's College of Engineering on 08.08.2023, where he provided valuable insights and guidance to first-year engineering students, helping them build a strong foundation in the subject.

Dr. Y. Balto, Assistant Professor in the Department of Mechanical Engineering, delivered a special lecture on "Feasibility Study and Developing a Research Plan" on 21.09.2023. The session, aimed at mechanical engineering students, focused on key methodologies for conducting feasibility studies and structuring effective research plans, providing students with essential knowledge to navigate their research endeavors.

On 16.09.2023, Dr. M. Antony Foster Raj took on the esteemed role of judge for paper, poster, and video presentations in competitions jointly organized by IET, EnSav, FOSSEE, and IEI in celebration of Engineer's Day. His expertise played a crucial role in evaluating innovative ideas and research work presented by students, fostering a culture of academic excellence and technical creativity.

Additionally, on 01.09.2023, Dr. M. Antony Foster Raj acted as a resource person for an NSS camp conducted by Little Flower Girls Higher Secondary School at Poochivalagam. He delivered an engaging and thought-provoking talk on "Garbage Removal – Every Individual's Responsibility" to 11th-standard students. His session emphasized the importance of waste management, environmental responsibility, and individual contributions toward a cleaner and sustainable society, inspiring young minds to take proactive steps in maintaining cleanliness in their surroundings.

Through these engagements, our faculty members continue to make significant contributions to academia, research, and community outreach, reinforcing the department's commitment to excellence and societal impact.

Orientation Program on Research Excellence

The Department of Mechanical Engineering at St. Xavier's Catholic College of Engineering organized a comprehensive orientation program titled "How to Excel in Research Activity", aimed at equipping students with the necessary knowledge and skills to undertake impactful research. The session was initiated and led by Dr. M. Felix Xavier Muthu, Associate Professor and Research Coordinator, who provided valuable insights into the fundamentals of research, the significance of innovation, and the methodologies required for high-quality academic inquiry.

As part of this orientation, Dr. Anand Rajkumar, Assistant Professor in the Department of Mechanical Engineering, delivered a special lecture on 21.09.2023, focusing on "Feasibility Study and Developing a Research Plan." His session emphasized the importance of conducting feasibility studies to assess the practicality and potential success of research projects. He guided students through the step-by-step process of structuring a research plan, identifying research gaps, formulating objectives, and selecting appropriate methodologies.

The orientation program served as an interactive platform for students to enhance their understanding of research methodologies, proposal writing, and project execution. It encouraged students to approach research with a critical and analytical mindset, fostering a culture of innovation and academic excellence within the department.

By organizing such initiatives, the Department of Mechanical Engineering continues to nurture aspiring researchers, preparing them to contribute meaningfully to advancements in technology and engineering.

Patent Publication on Advanced Photocatalytic Materials

The Department of Mechanical Engineering takes pride in the innovative research contributions of its faculty members. Mr. M.L. Ajin and Dr. J. Jebeen Moses, Assistant Professors in the department, have successfully published a patent for their work titled "A Novel Method for Synthesizing Hematite Nanoplatelets and Hematite-ZnO Core-Shell Nanospindles for Enhanced Photocatalytic Applications."

This research focuses on the synthesis and enhancement of photocatalytic materials, specifically Hematite Nanoplatelets and Hematite-ZnO Core-Shell Nanospindles. Hematite (Fe_2O_3) and Zinc Oxide (ZnO) are widely known for their photocatalytic properties, making them highly effective for applications in environmental purification, wastewater treatment, and solar energy conversion. The novel synthesis method proposed in the patent aims to improve the efficiency and stability of these materials, making them more suitable for practical industrial applications.

The core-shell nanostructures developed through this method enable better charge separation, enhanced light absorption, and superior catalytic activity, addressing key challenges in existing photocatalysts. By advancing the field of nanomaterials and renewable energy, this research holds significant potential for sustainable and eco-friendly technologies.

This patent is a testament to the department's commitment to cutting-edge research and innovation, fostering a culture of scientific discovery that benefits both academia and industry. It also serves as an inspiration for students and researchers.

Faculty Participation in Entrepreneurial Development Program

Mr. Micheal Raj, Assistant Professor in the Department of Mechanical Engineering, actively participated in the Entrepreneurship Development Cell Coordinators' Meet for the Tirunelveli region, held at Anna University, Chennai, on 07.09.2023. This prestigious event brought together faculty members, coordinators, and experts from various institutions to discuss and strategize innovative approaches for fostering entrepreneurship among engineering students.

Student Field Visit to Ethamozhy Coir Cluster

As part of their practical learning and industry exposure, the first-year M.E. Energy Engineering students embarked on a field visit to the Ethamozhy Coir Cluster in Ethamozhy on 15.09.2023. This visit provided students with a firsthand understanding of coir processing techniques, energy utilization in manufacturing, and sustainable practices within the industry.

During the visit, students observed the various stages of coir fiber extraction, treatment, and product development, gaining valuable insights into the mechanical and energy-intensive aspects of the coir industry. They also explored the use of renewable energy sources and energy-efficient technologies employed in the facility, aligning with their coursework in Energy Engineering.

This experiential learning opportunity allowed students to bridge the gap between theoretical concepts and real-world applications, enhancing their understanding of industrial energy management, sustainability, and resource optimization. The visit fostered critical thinking, problem-solving skills, and awareness of eco-friendly industrial practices, reinforcing the department's commitment to hands-on education and research-driven learning.

SXCCE and Pinnacle Biosciences Forge Partnership for Innovation and Research

The Memorandum of Understanding (MoU) between St. Xavier's Catholic College of Engineering (SXCCE) and Pinnacle Biosciences aims to foster collaboration in research and development. Signed on September 22, 2023, this partnership focuses on knowledge exchange, joint research projects, and technological advancements in areas such as microgrid management and energy auditing. The MoU facilitates shared expertise, sponsored research, academic publications, and workshops while ensuring confidentiality and mutual benefits. Effective for five years, it highlights a commitment to innovation and academic-industry synergy in cutting-edge technological domains.

TVS Training and Services Ltd. Partners with SXCCE to Establish Centre of Excellence

A Memorandum of Understanding was signed on November 22, 2023, between TVS Training and Services Ltd. and SXCCE to establish a Centre of Excellence Lab and promote industry-academia collaboration. This partnership aims to enhance technical skills through expert-led guest lectures, industrial visits, and conferences, providing students with hands-on experience and insights into industry trends. The MoU fosters knowledge sharing, skill development, and research opportunities, strengthening the bridge between academic learning and industrial expertise.

Academic and Industry Collaboration: A Step Towards Excellence

As part of our continuous efforts to bridge the gap between academia and industry, The department of

Mechanical Engineering organized several enrichment programs, guest lectures, industrial visits, and value-added sessions. These activities aimed to enhance students' technical knowledge, career awareness, and practical skills through interactions with industry experts.

Guest Lectures & Career Guidance

To provide students with insights into career opportunities and industry trends, multiple career guidance sessions were conducted. Experts like Mr. K. Arjun (Founder, Crazy Coconut, Tirunelveli) and Mr. Ashick Nithesh (Baytech Innovations, Karungal) shared valuable knowledge about career growth in mechanical engineering. Additionally, Mr. A. Anish (Mechanical Design Engineer) guided students on Alias Software, a crucial tool in design engineering.

Technical Enrichment Programs

To enhance subject-specific expertise, an insightful session on "Application of Heat Transfer in Rocket Systems" was conducted by Dr. M. Xavier, Retired Deputy Director of LPSC, ISRO, Trivandrum. This session provided students with in-depth knowledge of heat transfer applications in aerospace technology.

Industrial Visits & Hands-On Learning

On October 3, 2023, a group of 92 students from the department visited Jai Nidhi Automation and Generic CNC Engineers Private Limited in Coimbatore, on October 4, 2023 as part of an industrial exposure program.

During the visit, students gained valuable insights into advanced automation systems, CNC machining, and precision engineering. At Jai Nidhi Automation, they observed the latest innovations in industrial automation and robotics, understanding their applications in modern manufacturing. Meanwhile, at Generic CNC Engineers Pvt. Ltd., students explored CNC machine operations, programming, and quality control processes, providing them with a practical perspective on industrial production.

This visit enhanced their technical knowledge, problem-solving skills, and industry readiness, bridging the gap between classroom learning and real-world engineering applications. Such initiatives play a crucial role in preparing students for future careers in manufacturing and automation.

Special Events & Competitions

To encourage innovation and skill-building, an Engineers' Day Competition was held, coordinated by Mr. C. Jebastalin and Team from CAD DESK, Nagercoil. Such events inspire students to push their creative and technical limits.

Inauguration of ISHRAE SXCCE Students' Chapter

On September 24, 2023 (Saturday), at 10:00 AM, the Inauguration Ceremony of the ISHRAE SXCCE Students' Chapter was successfully conducted at the Einstein Seminar Hall at St. Xavier's Catholic College of Engineering. The event marked a significant step towards enhancing student engagement in the field of Heating, Ventilation, Air Conditioning, and Refrigeration (HVAC&R).

A total of 26 student members actively participated in the inauguration, signifying their commitment to professional development in the domain. The ceremony was graced by Er. Angelin Indira, an esteemed alumna of SXCCE, who attended as the chief guest. She shared valuable insights on career prospects, industry advancements, and the importance of ISHRAE membership in shaping the future of budding engineers in the field of mechanical and HVAC technologies.

The event commenced with the presidential address delivered by the correspondent and principal of SXCCE, who emphasized the significance of ISHRAE in bridging the gap between academia and industry. They highlighted the benefits of student membership, including technical workshops, industrial exposure, and networking opportunities with HVAC professionals.

The ISHRAE SXCCE Students' Chapter aims to foster innovation, industry-academia collaboration, and hands-on learning experiences for students interested in HVAC, energy efficiency, and sustainable building technologies. With this inauguration, SXCCE continues its commitment to providing students with professional growth opportunities, research exposure, and industry connectivity.

This event marks the beginning of an exciting journey for the ISHRAE student members, equipping them with knowledge, skills, and industry exposure essential for their future careers in mechanical and HVAC engineering.

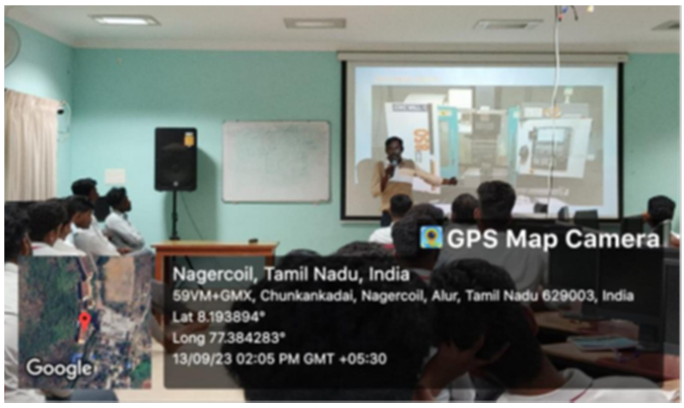
SAEINDIA Seminar on Latest Trends in Nondestructive Testing (NDT)

On September 13, 2023, SAEINDIA organized an insightful online seminar on the latest trends in Nondestructive Testing (NDT) for the Mechanical Engineering students of St. Xavier's Catholic College of Engineering. The session was conducted in the CAD Lab and aimed to equip students with knowledge about advanced NDT techniques and their growing importance in modern engineering applications.

The seminar was led by Er. Kumerasan, Managing Director of Vibrant NDT Services Pvt. Ltd., an expert in the field of material testing, quality control, and industrial inspection. He provided an in-depth explanation of various nondestructive testing methods, such as ultrasonic testing, radiographic testing, magnetic particle inspection, eddy current testing, and dye penetrant testing. These techniques play a crucial role in ensuring the structural integrity, safety, and reliability of components across industries such as aerospace, automotive, manufacturing, and construction.

He also emphasized how NDT techniques help detect defects in materials and structures without causing damage, making them highly valuable in today's quality-driven and safety-conscious industrial environment. He also discussed emerging trends, automation in NDT, and industry requirements, encouraging students to explore career opportunities in inspection, quality assurance, and failure analysis.

The session concluded with an interactive Q&A session, where students engaged in discussions about real-world applications, advancements in testing methodologies, and the significance of NDT certifications.

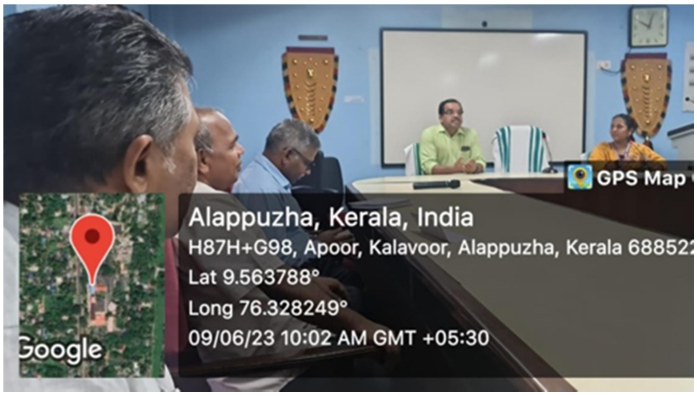


At the end of the seminar, Dr. J. Jebeen Moses, Assistant Professor and Faculty Advisor of SAEINDIA SXCCE, delivered the vote of thanks, expressing gratitude to Er. Kumerasan for his valuable insights and practical knowledge-sharing. He also acknowledged SAEINDIA's efforts in organizing such informative sessions that enhance students' technical knowledge and industry readiness.

This seminar provided students with a comprehensive understanding of nondestructive testing, reinforcing the importance of quality control and safety standards in mechanical engineering applications.

SXCCE Project Team's Research Visit to Central Coir Research Institute, Alleppey

On June 9, 2023, a project team from St. Xavier's Catholic College of Engineering visited the Central Coir Research Institute (CCRI) in Alleppey, Kerala, to explore potential avenues for joint research on coir fiber and its applications. The visit was aimed at understanding coir processing technologies, fiber testing methods, and advanced machinery used in the industry.



The team, comprising Dr. Antony Forster Raj and Dr. Ajith J. Kings from the Department of Mechanical Engineering, engaged with experts at CCRI to gain insights into the latest innovations in coir processing, sustainable material applications, and value-added products. They examined various processing machinery, including fiber extraction units, spinning machines, and quality testing equipment, to assess their efficiency and scope for improvement.

During the visit, discussions were held on collaborative research opportunities, particularly in enhancing the mechanical properties of coir fiber for industrial applications. The team explored ways to integrate mechanical engineering principles with traditional coir processing techniques to improve fiber strength, durability, and usability in composite materials.

This visit marks a significant step toward industry-academia collaboration, paving the way for future research projects, student internships, and innovative product development in the field of natural fiber technology. The project team expressed their appreciation for the support and technical expertise provided by CCRI, reaffirming their commitment to contributing to sustainable material research and eco-friendly industrial advancements.