FRANCIS XAVIER ENGINEERING COLLEGE
AN AUTONOMOUS INSTITUTION

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Recognized under Section 2(f) & 12(B) of the UGC Act, 1950

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# DEPARTMENT OF MECHANICAL ENGINEERING MONTHLY NEWS – OCTOBER 2024

## ABOUT DEPARTMENT OF MECHANICAL ENGINEERING

**The department offers UG program in B.E Mechanical engineering from the year 2005. The department started a PG program M.E Industrial Safety Engineering from this academic year 2018- 2019. This course has wide range of job opportunity in the Industrial and Academic sector of India as well as abroad. The Department aims at providing the students with a perfect blend of intellectual and practical experiences with the support state-of the-art laboratories and well-defined academic structure. The UG program is accredited by National Board of Accreditation (NBA). The special feature of the Department has established three applied laboratories, in addition to the regular labs to support students to master skills to make each one industry-ready, with a solid grounding in the principles and practice of Mechanical Engineering. We also have a strong academy for training students to appear for GATE exam.**

## VISION OF THE DEPARTMENT

**To produce competent Mechanical Engineers of excellent technical and managerial skills with profound morality for global, national and confront societal development.**

## MISSION OF THE DEPARTMENT

**1. To provide quality education in Mechanical Engineering with an interdisciplinary approach, encouraging innovation, research, and Entrepreneurship through world-class infrastructure and proficient teachers.**

**2. To make the department self-reliant through multiple programs with excellent curricula, best practices, and industry exposure.**

**3. To inculcate technical, professional, and leadership skills, moral ethics, and lifelong learning.**

## Programme Educational Outcomes

The Bachelor of Mechanical Engineering curriculum is designed to impart Knowledge, Skill, and Attitude to the graduates to

PEO 1: Have a successful professional career in Mechanical Engineering and allied industries, either by employment or through entrepreneurship.

PEO 2: Establish competency in Design, Thermal, Materials, and Manufacturing system with ethics and social responsibility.

PEO 3: Have a continual receptiveness for leadership and social challenges.

## Message from the Head of the Department

**Dear Colleagues,**

**Greetings!**

I have great pleasure and pride in announcing that the Department of Mechanical Engineering is publishing the newsletter for the month of October 2024. We are steadfast in our progress as it involved various activities that enabled the hidden talents of the department students and faculty members to be brought to light. Besides the lockdown, our faculty members are continuously attending various training programs, publishing research papers, and book chapters, and are also working on getting patents.

This newsletter is the reflection of department activities that showcase all the events held in the department, the contributions of faculty members, and students, and the best practices adopted. I would like to congratulate all the members of the editorial board for their sincere effort to realize this venture.

**Dr. R. Samuel Hansen, M.E., Ph.D.**
Professor & Head
samuel_hansen@rediffmail.com

*Edited & Designed by Dr. K. Vinukumar, AP/Mech, FXEC SOCIAL MEDIA /FXEC Mechanical*

# GUEST LECTURE / SEMINAR / SKILL TRAINING

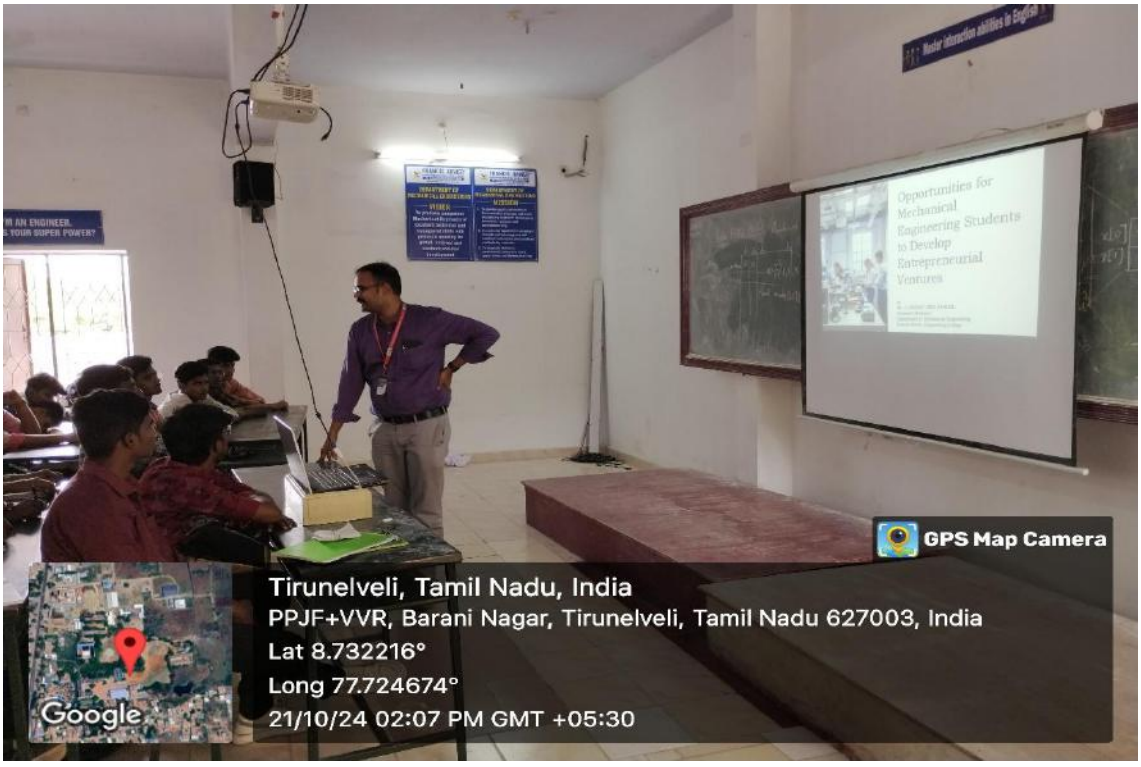
**Entrepreneurship Development Cell & Institution's Innovation Council**

**"Opportunities for the Mechanical Engineering Students to Develop Entrepreneurial Venture"**

An "Opportunities for the Mechanical Engineering Students to Develop Entrepreneurial Venture" program was organized by the Entrepreneurship Development Cell and the Institution's Innovation Council in association with the Department of Mechanical Engineering on October 21, 2024, from 12:30 PM to 4:30 PM. The event was held in offline mode. Dr. K. Vinukumar, AP/MECH, inaugurated the session with a welcome address.

The session was conducted by Mr. J. Jeremy Jeba Samuel, Assistant Professor, Department of Mechanical Engineering at Francis Xavier Engineering College, Tirunelveli. A total of 50 students participated in the program, which was coordinated by Dr. K. Vinukumar, AP/MECH. The event was conducted under the guidance of Dr. Lourdes Poobala Rayen, EDC Director.

The resource person explained that mechanical engineering students can develop entrepreneurial ventures by creating innovative products, starting manufacturing businesses, offering consulting services, developing tech solutions, engaging in research and development, providing educational workshops, launching robotics startups, participating in competitions, focusing on social entrepreneurship, and collaborating with other disciplines or startups.




***Edited & Designed by Dr. K. Vinukumar, AP/Mech, FXEC SOCIAL MEDIA /FXEC Mechanical***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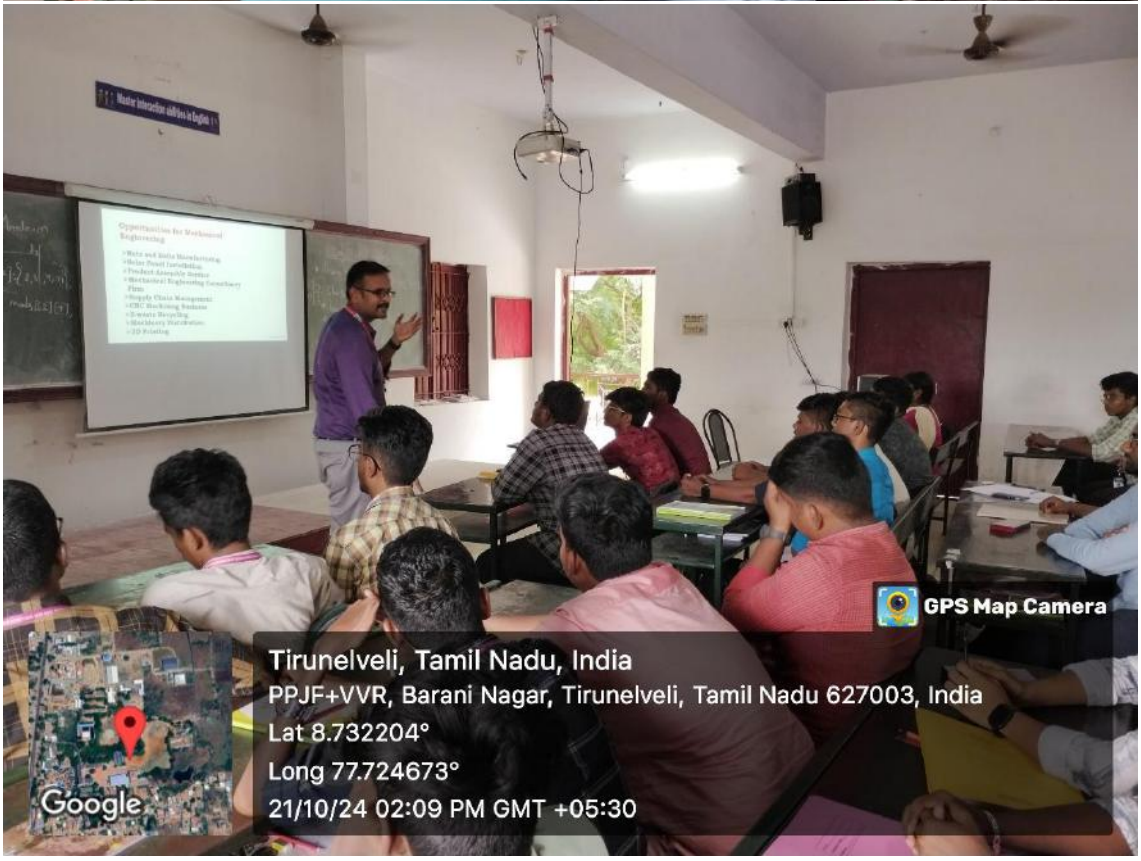
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## Guest Lecture Report

**Recent Trends in Supply Chain Management :**

FX Alumni Association organized a guest lecture in association with department of Mechanical Engineering for the Fourth year Mechanical students. Er. Ramkumar., Transportation Specialist., Amazon., Chennai. delivered the guest lecture on “Recent Trends in Supply Chain Management”. A heartfelt greeting to the resource person is extended by Dr. R. Samuel Hansen, HOD-MECH. The expert resource thanked the management for offering him this opportunity.

The guest lecture on Recent trends in supply chain management emphasize digital transformation powered by technologies like AI, IoT, and blockchain. These advancements enable real-time tracking, predictive analytics, and enhanced decision-making. Digital twins, virtual models that simulate supply chains, are being used for predictive planning and optimizing operations. Automation in logistics, inventory management, and procurement is also on the rise, enhancing operational efficiency and reducing human errors. The shift towards more localized and regional supply chains helps mitigate risks from global disruptions, ensuring continuity during crises like geopolitical tensions, natural disasters, or pandemics

The speaker explained the sustainability is a growing priority, leading to the development of circular supply chains that focus on reducing waste and promoting recycling, reuse, and refurbishment of products. Companies are integrating eco-friendly practices to meet regulatory requirements and respond to consumer demand for greener products. Many businesses are now assessing the carbon footprints of their supply chains and making investments in renewable energy sources and sustainable materials**.**


***Edited & Designed by Dr. K. Vinukumar, AP/Mech, FXEC SOCIAL MEDIA /FXEC Mechanical***

## Maintenance and Reliability Engineering

FX Alumni Association organized a guest lecture in association with department of Mechanical Engineering for the Fourth year Mechanical students. Er. S.Prasanth., Engineer., R.K.M Power Engineering Pvt. Ltd., Chennai. delivered the guest lecture on “Maintenance and Reliability Engineering”. A heartfelt greeting to the resource person is extended by Dr. R. Samuel Hansen, HOD-MECH. The expert resource thanked the management for offering him this opportunity.

The guest lecture on Maintenance and Reliability Engineering provided a comprehensive overview of how these disciplines contribute to the sustainability and efficiency of engineering systems. The speaker emphasized the importance of establishing a robust maintenance framework that includes preventive, corrective, and predictive approaches. Preventive maintenance focuses on scheduled interventions to avoid equipment failures, while predictive maintenance uses real-time data to anticipate when repairs are needed. These strategies are essential in reducing unexpected downtimes, extending equipment lifespan, and ensuring the smooth operation of critical infrastructure.

The speaker explained the significance of reliability metrics such as Mean Time Between Failures, Mean Time to Repair (MTTR), and Failure Modes and Effects Analysis (FMEA). The Speaker explored Reliability-Centered Maintenance (RCM), a methodology that prioritizes maintenance activities based on system reliability and safety, ensuring that resources are focused on the most critical components.



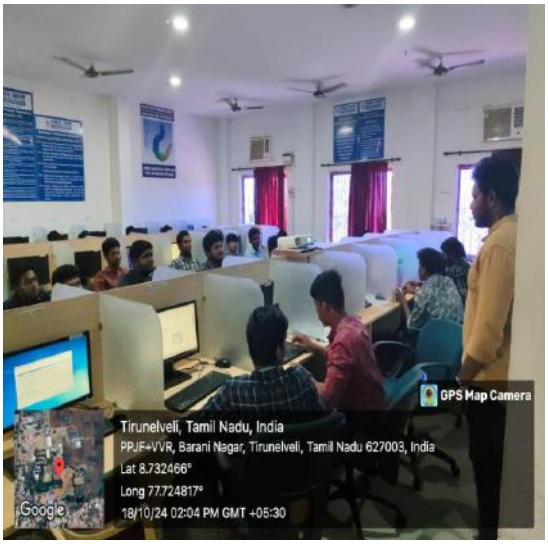
***Edited & Designed by Dr. K. Vinukumar, AP/Mech, FXEC SOCIAL MEDIA /FXEC Mechanical***

## Automation and Robotics in Manufacturing

FX Alumni Association organized a guest lecture in association with department of Mechanical Engineering for the Fourth year Mechanical students. Er. S.Jim Andrew., Supervisor., JBM Groups., Hosur. delivered the guest lecture on “Automation and Robotics in Manufacturing”. A heartfelt greeting to the resource person is extended by Dr. R. Samuel Hansen, HOD-MECH. The expert resource thanked the management for offering him this opportunity.

The guest lecture on "Automation and Robotics in Manufacturing" provided valuable insights into how these technologies are transforming modern manufacturing processes. The speaker began by explaining the basic concepts of automation and robotics, highlighting how automation reduces manual intervention in repetitive tasks, while robotics introduces precision and flexibility into production lines. This integration has led to significant improvements in efficiency, reducing production time and costs while maintaining consistent product quality. The lecturer emphasized that these innovations have revolutionized industries like automotive and electronics manufacturing.

It focus on to the specific applications of robotics in manufacturing. Examples included robotic arms used in assembly lines, autonomous guided vehicles (AGVs) for transporting materials, and automated quality control systems using AI-powered sensors. The lecturer also discussed the impact of robotics on job roles, explaining that while some tasks are automated, new opportunities in robot maintenance**.**


***Edited & Designed by  Dr. K. Vinukumar, AP/Mech, FXEC  SOCIAL MEDIA /FXEC Mechanical***

## Carrer Path in Oil and Gas Industry

FX Alumni Association organized a guest lecture in association with department of Mechanical Engineering for the Fourth year Mechanical students. **Er. Abdul Ajees., Planning Engineer., Shell Petrochemicals., & Founder- Delcon Company., Chennai.** delivered the guest lecture on **"Carrer Path in Oil and Gas Industry"**. A heartfelt greeting to the resource person is extended by Dr. R. Samuel Hansen, HOD-MECH. The expert resource thanked the management for offering him this opportunity.

The guest lecture on career paths in the oil and gas industry offered valuable insights into the unique opportunities and challenges in this dynamic sector. As an experienced professional in Planning Engineer shared their journey, discussing the key skills and qualifications necessary to thrive in the field. He emphasized the importance of a strong educational foundation in engineering, geosciences, or business management and highlighted additional certifications that can enhance employability, such as offshore safety training and certifications from institutions like the Society of Petroleum Engineers (SPE).

A significant part of the lecture focused on the various career paths available within the industry, including roles in exploration, drilling, production, and refining, as well as non-technical careers in finance, legal compliance, and environmental management. It specifies the careers in exploration and drilling tend to involve fieldwork in challenging environments, project management often require technical expertise in process optimization and project planning.



***Edited & Designed by Dr. K. Vinukumar, AP/Mech, FXEC SOCIAL MEDIA /FXEC Mechanical***

## MOU

### Industrial Institute Interaction - Recent Trends in Pump Industries

The event marked a significant milestone with the signing of a Memorandum of Understanding (MOU) between Astrox Aeorspace Pvt. Ltd.,Chennai and Francis Xavier Engineering College. This MOU aims to foster collaboration between the industry and the institution, offering students opportunities for internships, Placements, Industrial projects, Industry-oriented skill training for students and faculty and Industrial visit.

Preamble AstroX Aerospace Private Limited is a leading drone manufacturing company in India, developing advanced drones for agriculture, surveillance, surveying, videography, industrial use, and delivery. AstroX is also involved in skill development and training in drone technology.
FXEC is a renowned educational institution focused on providing quality education and technical skills in various engineering fields.

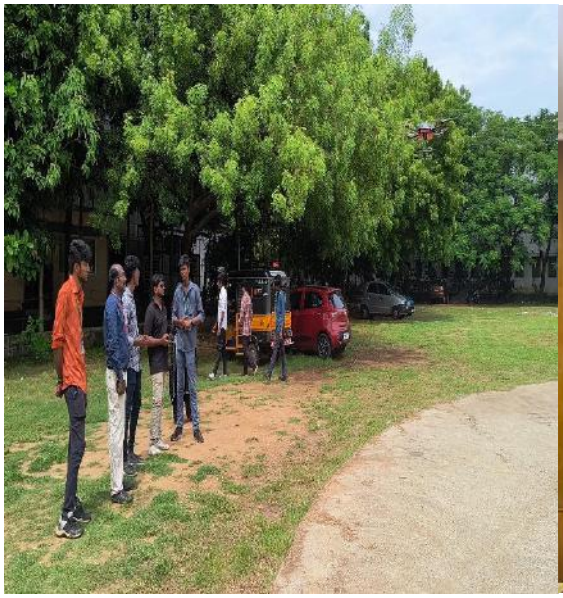
This MOU is established to outline the collaboration between AstroX and FXEC in providing drone-related training, setup, and skill development programs at FXEC.

## DRONATHON

### Hackathon on Drone of GIS Survey and Mapping with them

On 24th October, 3rd and last day of the Workshop “Aerial Insights and Mapping with drones”, the hackathon titled “Hackathon : GIS Aireal survey and mapping Dronathon” was conducted by the trainers Mr. Saravana kumar UAV system engineer and Mr. Bala Murugan Trainer from Astrox, the students used their knowledge of the three days workshop and participated in this hackathon those who felt confident in their skills learned from the workshop.

The Hackathon was divided into two parts, assessment and real time drone operating test . The Assessment tested their knowledge of the drone, its properties, components, types and uses. Then the drone operating test were conducted where the trainers gave real applied tests which used in drone licensing to our students and finally with both the test results top 3 students was selected and awarded with cash prize. With this Hackathon experience students are sure to use it and achieve greater heights in their future related to drone field



# DRONE WORKSHOP

## Workshop on GIS Survey and Mapping Drone

On 22nd of October 2024, Unmanned Ariel Vehicle (UAV) Lab Hosted an event that is workshop titled" Drone Workshop on GIS Survey and Mapping with Drones". Initially a program was conducted for the commencement of the workshop, which was conducted at college's MBA presentation hall brought together students, faulty and industrial professionals to welcome the trainers. The event was attended by the students from various departments, staff coordinators, the principal and trainers.

Two trainer's from Astrox Aerospace Pvt. Ltd., Chennai , Mr. Saravana kumar UAV System Engineer, and Mr. Bala Murugan, Trainer from that company came to enrich students with their knowledge on drones and mapping.

On 1st day they gave a presentation on the introduction of the drones, their types, use cases and about the growth oppurtunities in pursing a carrer related to drones during the morning session. Then in the evening session they practiced students to operate drone step by step by giving a hands on training individually with the simulation technology by the equipments they brought with them and also explained about them.

On 23rd October 2024, 2nd day of the workshop they gave a real time operating experience to each student in the Helipad of our college with DJ drones during the morning session. Then in the evening session they gave a presentation about the advancements in drone ,their technologies and how they works, after they started teaching students about mapping and how to do them in real time by showcasing them from their laptops to some of the batches and the 2nd day came to an end.

On 24th October, 3rd day of the workshop they continued the mapping session to the remaining students and taught about the connections & assembly of the drone to the students. Then they gave exposure of Drone laws to the students in the morning session and Finally the workshop came to an end by conducting a Hackathon on the things taught in the three days and gave prizes to top three students in the evening by the principal.

The Drone workshop on "Aerial insights and mapping" was a huge success offering attendees valuable insights and knowledge about operating of drones, Aerial Insighting and Mapping. The trainers also gave students with oppurtunities of internship and placement in Astrox. The students are sure to have a wonderful and fun experience in attending this workshop and will undoubtedly benefit them in deciding and achieving their dream goal in their future.

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## EDC

This is to certify that **Jeron Bennison S** of I year **Mechanical Engineering** has actively participated in the Discussion on "**Opportunities for the Mechanical Engineering Students to Develop Entrepreneurial Venture"** presented by Mr. J. Jeremy Jeba Samuel, AP/Mech. The Session was Organized by EDC cell of Mechanical Engineering Department in association with Institution's Innovation Council of **Francis Xavier Engineering College,** Tirunelveli, Tamilnadu on 21.10.2024.

## Guest Lecture on Forming of metals

The Department of Mechanical Engineering organized a guest lecture on "Forming of metals"for II year Mechanical Engineering Students on 18th October, 2024. A total of 50 students haveattended the program. Dr.S.Muthu Natarajan, Assistant Professor, Kamaraj College ofEngineering presided the program as chief guest. The program began with welcome addressand followed by chief guest introduction by Mr.S.David Blessley AP/MTRE. The chief guestgave a brief orientation towards the basic principles of metal forming, including plasticdeformation, stress-strain relationships, and material properties. He also shared his knowledgeon modelling and analysis of sheet metals using FEMAP NASTRAN. He enlightened thestudents how NASTRAN are used for finite element analysis (FEA) in metal forming. Finallythe program ends with a formal vote of thanks provided by Mr. S.David Blessley AP/Mech


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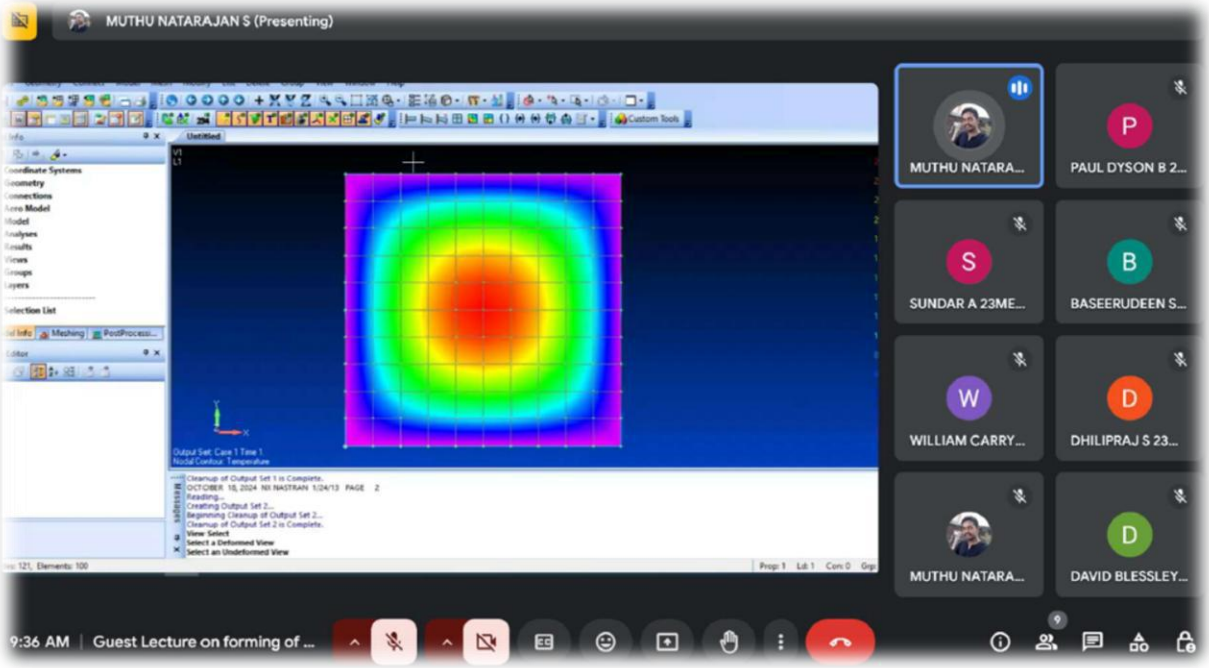
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# INDUSTRIAL INSTITUTE INTERACTION

The event marked a significant milestone with the signing of a Memorandum of Understanding (MOU) between ICAR SCAD Krishi Vigyan Kendra (SCAD KVK) and Francis Xavier Engineering College. This MOU aims to foster collaboration between the industry and the institution, offering students opportunities for, Industrial projects Related to Drones, Industry-oriented skill training for students and faculty.

This Memorandum of Understanding is signed between ICAR SCAD KrishVigyan Kendra, Vagaikulam, Thoothukudi, Government of India (Hereafter named ICAR SCAD KVK) and Francis Xavier Engineering College (Hereafter named FXEC), 103 G2 Bye pass road, Vannarpettai, Tirunelveli, Tamil Nadu 627003.

ICAR SCAD KVK engaged on offering Training, Entrepreneurships and Skill development programmes to enhance the knowledge in the agriculture and allied sector.

Both parties recognise that they share common goals and are desirous to establish a cooperative arrangement towards research.

Both organizations are desirous to associate in all related areas, furtherance of knowledge based enterprises exchanging information towards effective partnership for Research and Development.

The two parties here by, mutually agree upon and place on record this signature on this document with their full conscious understanding and acceptance in the matters as below;

Internship by way of willingness to intake students and provide them with practical knowledge and guidance are required for the internship programme as free of cost or minimum charges.

Joint ventures through arrangement of workshop, seminar, field visit, conference and projects etc.,

Organize extension and societal activities.

Entrepreneurship training to students.

Faculty interface with the students by way of lectures.

Joint Research Project: The two parties will explore opportunities or undertaking joint research projects, and may seek research funding from external funding agencies. Each such research proposal shall require approval of the respective institutions.

The areas of cooperation may be revised by mutual consent. However, specific programmes may require separate agreements detailed out and documented as annexures to this MoU.