



**FRANCIS XAVIER<sup>TM</sup>**  
**ENGINEERING COLLEGE**  
**AN AUTONOMOUS INSTITUTION**

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## DEPARTMENT OF MECHANICAL ENGINEERING

### MONTHLY NEWS – JANUARY 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 with a purpose to make each one industry-ready,

#### 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 November 2023. Amidst the COVID-19 pandemic situation, we strived hard to keep the students engaged and utilize the time not only for quality education but for self-development. 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](mailto:samuel_hansen@rediffmail.com)

## EDITORIAL BOARD

Dr. Dr. R. Samuel Hansen, Professor & Head of Department, Editor – in – Chief.

Dr. K.Vinukumar, Assistant Professor, Mechanical Department, Faculty In charge.

## GUEST LECTURE

### **GUEST LECTURE: “Drones : An Overview”**

On 12/01/2024, Students had the opportunity to attend an enlightening event on drone technology at FX engineering college, featuring Dr. Cu Hari, an esteemed academic advisor and technician with a background in both MIT Chennai and DRDO (Defence Research and Development Organization). The event focused on various aspects of drone technology, including types of drones, their processes, working principles, and featured insightful videos, including speeches by A.P.J. Abdul Kalam and other drone-related content. Dr. Cu Hari, an academic advisor and technician at MIT Chennai, brings a wealth of knowledge and experience to the field of drone technology. Having also served in DRDO, his expertise extends to the defense sector, providing a unique perspective on the practical applications of drones. Dr. Cu Hari began the session by categorizing drones into various types based on their design, purpose, and applications. He covered a range of drones, from consumer-grade quadcopters to advanced military surveillance drones, highlighting the versatility of this technology. The presentation delved into the intricate processes involved in drone operations. Dr. Cu Hari explained how drones navigate, communicate, and execute tasks based on pre-programmed algorithms or real-time human input. The emphasis was on the importance of precision and efficiency in drone processes. Understanding the working principles of drones is crucial for their effective utilization. Dr. Cu Hari provided detailed insights into the key components and technologies that enable drones to fly, capture data, and perform various functions. This section included discussions on propulsion systems, sensors, and communication modules. To enhance the learning experience, Dr. Cu Hari incorporated multimedia elements into the event. Attendees were treated to video clips of speeches by the renowned scientist and former President of India, A.P.J. Abdul Kalam, and shedding light on the visionary aspects of drone technology and its potential impact on society.

Other videos showcased the evolution of drones and their applications in different fields. The event successfully integrated theoretical knowledge with practical applications, providing attendees with a comprehensive understanding of drone technology. The inclusion of A.P.J. Abdul Kalam's speeches added a historical context to the event, emphasizing the evolution of drone technology and its connection to broader scientific advancements. Attendees had the chance to interact with Dr. Cu Hari, fostering networking opportunities and enabling further exploration of drone-related topics. The drone technology event with Dr. Cu Hari at MIT Chennai proved to be an informative and engaging experience. The comprehensive coverage of drone types, processes, working principles, and the insightful videos contributed to a holistic understanding of this cutting-edge technology. Such events play a crucial role in bridging the



gap between academia and practical applications, empowering attendees to explore the vast potential of drone technology in various domains

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**Industrial Applied Lab**

**Guest Lecture on**  
**Drones : An Overview**

**Venue**  
MBA Seminar Hall  
Ground Floor, MBA Block

**12** FRIDAY JANUARY 2024  
2.00 pm to 3.00 pm

**GUEST LECTURER**  
**Mr. CU. Hari**  
Chief Technical Consultant & Advisor  
Centre for Aerospace Research,  
MIT Campus, Anna University,  
Chennai - 600044.

Organised by  
**Department of Mechanical Engineering**

**Staff Co-ordinators**  
**Dr. K. Robinson Jeyasingh**  
UAV Applied Lab Incharge  
Francis Xavier Engineering College  
**Mr. S. Sheik Sulaiman**  
Assistant Professor  
Dept. of MECH - FXEC

**Convenors**  
**Dr. R. Samuel Hansen**  
HOD  
Dept. of MECH - FXEC  
**Dr. K. Lakshmi Narayanan**  
Vertical Head  
Industrial Applied Labs  
**Dr. K. Jeyakumar**  
General Manager - Development  
**Dr. V. Velmurugan**  
Principal





### **GUEST LECTURE: “Role of Engineering in the virtual world”**


III Year Mechanical Engineering Students have attended the guest lecture on “Role of Engineering in the virtual world” on 11/01/2024 from 10am to 12.30pm. The guest Lecturer is Mr.P.Anto Jaiwin, a creative designer in 3D EXCITE from Dassault systems Global services, Pune, Maharashtra. First he gave an introduction of the virtual reality in the Engineering field point of view, then he started his presentation. In his presentation, He explained about Rendering, Animations, etc., It was an interactive session with questions and answers with the students. He talked about the processes the students need to take for the development of the product from designing the material using software’s to marketing and advertising the product.






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**nirf** RANKING INDIA  
2023  
**51-100** BAND



## Industrial Institute Interaction

**Guest Lecture on**  
**Role of Engineering in the Virtual World**


**Venue**  
APJ Auditorium  
FX Engineering College

| GUEST LECTURER |

**Er. Anto Jalwin P**  
Creative designer  
3DEXCITE  
Dassault Systemes Global Services

| Organised by |

**Department of Mechanical Engineering**



**Staff Co-ordinators**

**Dr. K. Robinson Jeyasingh**  
Assistant Professor  
Dept. of MECH - FXEC

**Dr. J. Sangilimuthukumar**  
Assistant Professor  
Dept. of MECH - FXEC

**Convener**

**Dr. R. Samuel Hansen**  
HOD  
Dept. of MECH - FXEC

**Dr. K. Jeyakumar**  
General Manager - Development

**Dr. V. Velmurugan**  
Principal



He also told about the current scenario about the advertisements related to rendering. He also talked about Blender, CAD, ANSYS and other such software's about its uses in different fields related to animations. He also showed videos about Animations, Virtual reality, augmented reality, etc., it gave the students the overall view about them, the students got to know much about its applications, uses and job opportunities. He also gave the students his contact information and some websites to get knowledge about the virtual world. He gave our students the required motivation for booming in that field He also gave the students information about the scope and opportunities related to virtual world. He also gave information about the courses and path they need to take for blooming in such fields.

He also gave suggestions to join competitions related to that field "AAKRUTHI" which will be helpful for our student's future internships and placements in Dassault System Global services. He also mentioned about our final year students who have won AAKRUTHI 2023 and made the final year students to give a brief experience from the competition, it made our students eager to join such competitions in the near future. It was a fruitful experience for

the students to share his knowledge and experience. Thus the students got to know much information about the field and the path to pursue to get bright future in that field. From this event our students got to know various fields in animations and designs related to mechanical engineering. The students are grateful and thankful for arranging such a knowledge full event for them to grow their skills and get betterment in their future.

### **GUEST LECTURE: "ADVANCE NDT TECHNIQUES IN INDUSTRY"**

The Department of Mechanical Engineering organized a guest lecture on "**Advance NDT Techniques in Industry**". The event was conducted on October 27th, 2023. This event was organized by Mr. J. Jeremy Jeba Samuel, Assistant Professor of the Department of Mechanical Engineering, for the Final Year Mechanical Engineering Students for the course "**19CE7809: Testing of Materials**". Er.S.Sundar, Director & Manager, Eddytech Technologies Inspection Academy, Tirunelveli was the Resource Person for this Program.

The poster is for a guest lecture event. At the top left is the logo of Francis Xavier Engineering College, an autonomous institution in Vannarpettai, Tirunelveli, with contact number 627 003. To its right is the NIRF India Rankings 2023 logo, showing a 51-100 band. The date and time are listed as Monday, January 29, 2024, from 11:30 a.m. to 12:30 PM. The title of the lecture is "Guest Lecture on Advanced NDT Techniques in Industry". The guest lecturer is Er. S. Sundar, Director & Manager of Eddytech Technologies Inspection Academy, Tirunelveli. The event is organized by the Department of Mechanical Engineering. The staff co-ordinator is Mr. J. Jeremy Jeba Samuel, Assistant Professor in the Department of MECH - FXEC. The convenor is Dr. R. Samuel Hansen, HOD of the Department of MECH - FXEC. Other organizers are Dr. K. Jeyakumar, General Manager - Development, and Dr. V. Velmurugan, Principal.

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**nirf** RANKINGS 2023  
INDIA  
Innovation  
NATIONAL INSTITUTIONAL  
RANKING FRAMEWORK  
51-100 BAND

**29** MONDAY  
JANUARY  
2024  
11:30 a.m. to 12:30 PM

**Guest Lecture on  
Advanced NDT Techniques in  
Industry**

| GUEST LECTURER |  
**Er. S. Sundar**  
Director & Manager,  
Eddytech Technologies Inspection Academy  
Tirunelveli

Organised by  
**Department of  
Mechanical Engineering**

**Staff Co-ordinator**  
**Mr. J. Jeremy Jeba Samuel**  
Assistant Professor  
Dept. of MECH - FXEC

**Convenor**  
**Dr. R. Samuel Hansen**  
HOD  
Dept. of MECH - FXEC

**Dr. K. Jeyakumar**  
General Manager - Development

**Dr. V. Velmurugan**  
Principal

The event was held in offline mode during the time schedule of 11:20 AM to 12:30 PM. The resource person gave very highly informative and valuable insights into Acoustic emissions, Leak testing, Visual testing, Strain gauging, Thermography and Concrete testing techniques. More advanced NDT techniques that are coming to the industry are Digital Radiography, Phased Array Ultrasonic testing, and Eddy current testing. The session was more practical and



the Resource Person was more interactive with the participants. He gave many employment-oriented ideas for our easy understanding of opportunities and the participants volunteered themselves by asking questions about the topic. He gave a detailed lecture about Eddy current testing in Tubes, Pipes and surfaces and explained the importance of Eddy current in Heat exchangers, Automobile parts, etc.,



### **Expert Talk: “Entrepreneurial Skills: A Key to Success”**

A “Entrepreneurial Skills: A Key to Success” was organized by Entrepreneurship Development Cell & Institution’s Innovation Council in association with the Department of Mechanical Engineering on 30<sup>th</sup> January, 2024 at 01:30 pm to 04.30 pm. The program was held via offline mode. Mr.S.Rakesh, AP/MECH inaugurated the session with welcome address.

First of all resource person said that entrepreneurial skill is a critical asset for achieving success in the dynamic world of business in continuation with he covered the key points of entrepreneurial skills such as proactive mindset, risk management and resource optimization. Then he discussed about the key components of entrepreneurial skills such as motivation, adaptability & creative thinking. After that he revealed about the successful entrepreneurs in the world market like Elon Musk, Oprah Winfrey & Jeff Bezos. For example, Elon Musk known for his ventures in Tesla, SpaceX and numerous other groundbreaking initiatives. Regarding benefits of developing entrepreneurial skills, he deliberated about the major elements such as innovation, independence & resilience. Mentorship, ongoing learning & networking are the major ways to enhance entrepreneurial skill and he told about the challenges in developing entrepreneurial skill such as risk management, market competition & financial uncertainty. Finally he concluded the session with the role of entrepreneurial skill in achieving success such as innovation & growth, global impact and personal empowerment.



### **SEMINAR: SAFE WORK PERMITS**

The Seminar was organized by Safety Club in association with Department of Mechanical Engineering with the entitled '**Safe Work Permits**' held on Jan 31, 2024 at 12.00 PM. The resource person for the event is Er.M.Manikandan, Safety Manager, L&T Constructions, Chennai. The seminar on "Safe Work Permits" was organized with the primary objective of



enhancing awareness and understanding among students regarding the importance, procedures, and best practices associated with issuing and managing safe work permits in industrial and workplace settings. Resource person covered the major topics such as intro to safe work permits, types of work permits, risk assessment & hazard identification, issuing & managing work permits, safe work practices, case studies & real life examples. The seminar on "Safe Work Permits" provided a comprehensive platform for students to deepen their understanding of the critical role that work permits play in ensuring safety in industrial and workplace environments. By fostering dialogue, sharing best practices, and leveraging insights from experts, the seminar contributed to strengthening safety culture and promoting proactive approaches to risk management.



### **Guest Lecture: Efficiency Optimization Strategies for Modern Power Plant**

FX Alumni Association organized a guest lecture in association with department of Mechanical Engineering for the Second year Mechanical students. **Mr. I.Praveen Jose., Safety Engineer., Bhavana Energy Infrastructure Pvt. Ltd. Chennai** delivered the guest lecture on “**Efficiency Optimization Strategies for Modern Power Plant**”. 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.

**Advanced Monitoring and Control Systems:** The speaker emphasized the importance of implementing advanced monitoring and control systems in power plants. These systems utilize sensors, data analytics, and automation to continuously monitor various parameters such as temperature, pressure, flow rates, and energy consumption. By analyzing this data in real-time, operators can identify inefficiencies and take corrective actions promptly, thus optimizing plant performance.

**Combined Heat and Power (CHP) Systems:** The lecture discussed the benefits of implementing Combined Heat and Power (CHP) systems, also known as cogeneration, in modern power plants. CHP systems generate both electricity and useful heat from a single fuel source, thereby maximizing energy efficiency.

**Digital Twin Technology:** The lecture touched upon the emerging trend of employing digital twin technology in power plants. A digital twin is a virtual replica of a physical asset or system that enables real-time monitoring, performance optimization, and predictive maintenance.

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51-100 BAND

**Alumni Event**

**Topic**  
**Efficiency Optimization Strategies For Modern Power Plant**

Organised by  
**Francis Xavier Alumni Association**

In association with  
**Department of Mechanical Engineering**

**30<sup>th</sup> JANUARY 2024**  
3 pm - 4 pm

Resource Person  
**Mr. I. Praveen Jose**  
Safety Engineer,  
Bhavana Energy Infrastructure Pvt. Ltd.

**Mr. S.M. Sunder Rajan**  
Assistant Professor / MECH

**Dr. R. Samuel Hansen**  
HOD / Mech

**Mr. S. Krishnakumar**  
Director, FXAA

**Dr. K. Jeyakumar**  
GM, Development

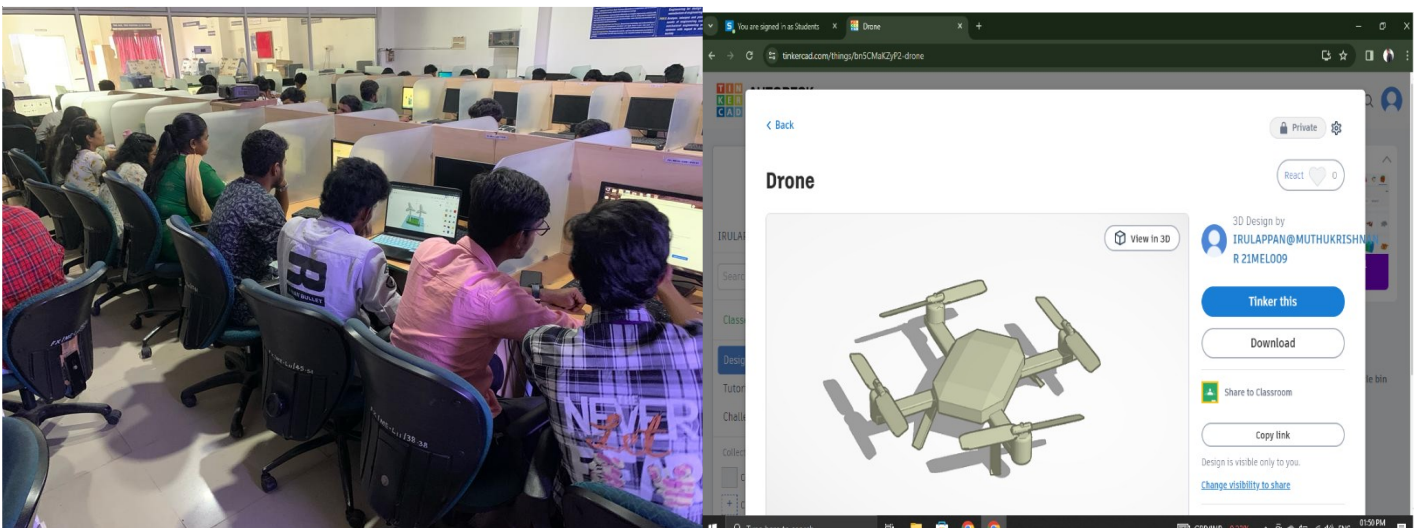
**Dr. V. Velmurugan**  
Principal



The guest lecture provided valuable insights into various technologies and methodologies aimed at enhancing the efficiency of power generation facilities. By implementing these strategies, power plants can not only improve their performance and reliability but also contribute to sustainability efforts by reducing carbon emissions and resource consumption.

## SKILL TRAINING

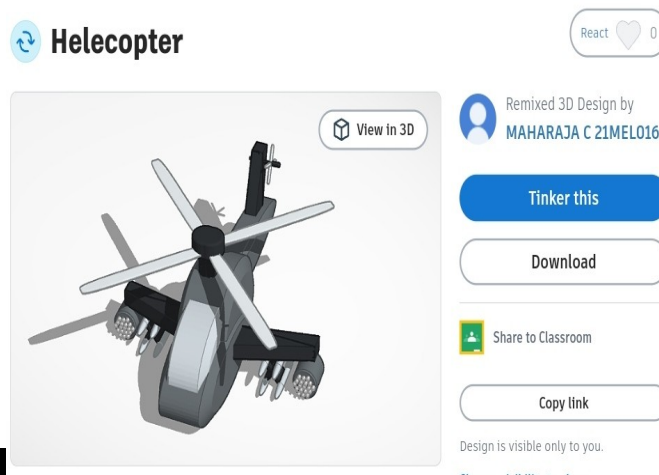
### SIMULATION OF PROTOTYPES USING TINKERCAD





Applied Lab Special Initiative Skill training has conducted for III year Students in the topic of “Simulation of Prototypes using TinkerCAD”. Over the course of four training days (18.01.2024 to 22.01.2024), the students acquired how to use Tinker CAD software for 3D design and to create projects with Arduino. Students actively participate in project development, which will be helpful for modeling fundamental electronic components and building circuits in TinkerCAD. A basic web-based 3D design program is called Tinker CAD. Tinker CAD is a simple web-based 3D design application. Tinker CAD provides a special module called Tinker CAD Classrooms for teachers and students. It is a simpler and faster teaching method. Students were evaluated through tasks at the conclusion of each training day, and on the last day, they turned in individual test projects. The training has conducted by Mr.J.Jeremy Jeba Samuel, AP/Mech & Hackathon Applied Lab in-charge and Guided by Dr. K. Lakshmi Narayanan, Vertical Head/ Applied Labs.

### **Product Modelling for 3D Printing with Tinker CAD Software**



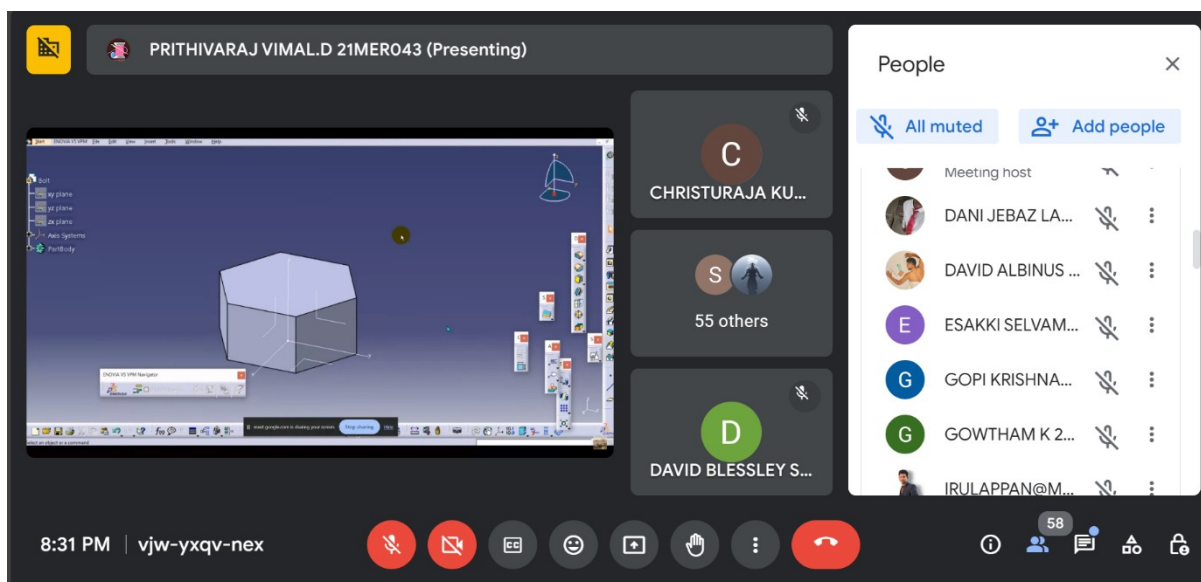
Applied Lab Special Initiative Skill training has conducted for III year Students in the topic of “**Product Modelling for 3D Printing with Tinker CAD Software**”. During four days of training (18.01.2024 to 22.01.2024) the students were learned about the Tinker CAD software for it applications in 3D design and in particularly familiarizing with 3D Printing product development. First-time users of the technology will find the program useful as it enables them to generate models that are suitable for 3D printing. For those who do not want the more sophisticated features of Sketch Up or Fusion360, Tinker CAD is a good substitute for other 3D modelling applications. Tinker CAD is a simple web-based 3D design application. A few characteristics to make new items, use fundamental forms then combine and cut, rotate, move, and alter manually as well as with precise measurements. For educators and students, Tinker CAD offers a unique module called Tinker CAD Classrooms. It is a quicker and easier method of instruction. Anyone can begin creating by logging in with simply their name and the class code that the instructor has issued. It is advised for pupils in upper grades to use the tool, which also incorporates electronics and code blocks.



Even the most reticent students begin to pay attention since it's entertaining and interesting. At the end of each day training students were assessed by assignments and on the final day student submitted individual test projects. The training has conducted by Mr.S.Sheik Sulaiman, AP/Mech & Innovation and Product Development Applied Lab in-charge and Guided by Dr. K. Lakshmi Narayanan, Vertical Head/ Applied Labs.

### Modelling using CATIA V5 (Night Skill)

Department of Mechanical Engineering organized 10 days online night skill program on Modelling using CATIA V5 for III Year students from January 8 to January 23, 2024. 104 students from III Year Mechanical Engineering got benefitted by this program. Mr.Christhu Raja Kumar of III Year Mechanical Engineering served as student trainer and guided the students throughout the entire program. The topics covered in this program includes fundamental aspects of CATIA V5, commands and tools, geometric constraints, part design, creation of simple 3D models, assembly design, modelling and assembly of engineering components etc., At the end of the program, the outcome was assessed by online test. Mr.S.David Blessley AP/Mech coordinated the entire program.



## INTERNSHIP

- Jeyanth Jashwin B – III Year Mechanical Engineering has successfully completed 10 days internship in Sundaram Auto Components Limited, Chennai from 09.01.2024 to 23.01.2024.
- MATHANA GOPAL V - III Year Mechanical Engineering has received participation certificate from Dhatchan Academy, Tirunelveli on Technical workshop Cryptography topic held on 20.01.2024.

- ✚ Five of our Applied Lab students have participated and displayed our innovative projects in Regional meet - Institutions Innovation council MoE's Innovation cell, held on Francis Xavier Engineering College, Tirunelveli on 24.01.2024.

1. SAKTHI SUBRAMANIAN M (Innovation Lab).
2. NAGARAJAN S (Innovation Lab).
3. KIRUBA SELVA KUMAR M (Innovation Lab).
4. RAJA MANI (HACKTHON LAB)
5. SANKAR NARAYANAN (HACKTHON LAB).

## NPTEL / FDP

The students and faculty members of Mechanical Engineering have attended the NPTEL courses on various disciplines during the odd semester of the academic year 2023-2024. The results were declared in the month of December. Three students from IV year and three students from III Year and a student from II Year have completed the course under various disciplines. 8 faculty members from Mechanical Engineering have successfully completed the NPTEL courses in their field of interest under various categories. 8 faculty members and 70 students are presently undergoing the NPTEL online course for the semester of the academic year 2023-2024 Even.

- ✚ Dr.R.K.A.BHALAJI has participated in the AICTE Recognized Faculty Development Programme on Green Manufacturing Conducted by Mechanical Engineering Department from 29/01/2024 to 02/02/2024 (One Week) at NITTTR, Chandigarh.
- ✚ Dr. R.Samuel Hansen has participated in the AICTE Recognized Faculty Development Programme on curriculum design for developing job related competencies from 15.01.2024 to 19.01.2024 (One Week) at NITTTR, Chandigarh.
- ✚ Dr.K. Ariyanayagam has participated in the AICTE Recognized Faculty Development Programme on outcome based curriculum development from 29.01.24 to 02.02.24 (One Week) at NITTTR, Chandigarh.
- ✚ Dr.K. Robinston Jeyasingh Swikker has participated in the AICTE Recognized Faculty Development Programme on curriculum design for developing job related competencies from 15.01.2024 to 19.01.2024 (One Week) at NITTTR, Chandigarh.
- ✚ Mr.S.M.Sunderrajan has participated in the AICTE Recognized Faculty Development Programme on Green Manufacturing Conducted by Mechanical Engineering Department from 29/01/2024 to 02/02/2024 (One Week) at NITTTR, Chandigarh.

- ✚ Mr.S.Rakesh has participated in the AICTE Recognized Faculty Development Programme on Green Manufacturing Conducted by Mechanical Engineering Department from 29/01/2024 to 02/02/2024 (One Week) at NITTTR, Chandigarh.
- ✚ Dr. J.Sangilimuthukumar has participated in the AICTE Recognized Faculty Development Programme on Green Manufacturing Conducted by Mechanical Engineering Department from 29/01/2024 to 02/02/2024 (One Week) at NITTTR, Chandigarh.

## PLACEMENT

That's great news! Congratulations to the student (PEER MOHAMED ASIF) has been placed at JSE Engineering Pvt Ltd in Chennai. Securing a job is a significant achievement, and it marks the beginning of a new phase in their professional journey. Further the following final year students (MARIAPPAN A, MOHAMED KAYUM KHAN N L, MARIMUTHU@RAJA M, JIM ANDREW S, RAMKUMAR R, ARUL JOSEPH THOMAS, BERSHAN B, KEERTHIC RAJU M, GIREESH A, ABIRAM H, HARI SIVAGNANAM S, MOHAMED IBRAHIM A) have been placed at ZF Commercial Vehicle, Chennai. This accomplishment is a testament to their hard work, dedication, and the skills they've acquired during their academic journey. Wishing them success and fulfilment in their new roles at ZF Commercial Vehicle. Also, the following students (MATHUMITHA A, ALAGAR MANIKANDAN M) have been placed at Insource Design, Chennai.