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Education Foundation

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

(Autonomous Institute Under VTU)

(Unit of Alva's Education Foundation (R), Moodbidri)

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Shobhavana Campus, MIJAR-574225, Moodbidri, D.K., Karnataka

DEPARTMENT OF MECHANICAL ENGINEERING

TECHNICAL FORUM REPORT-2023-24

TECHNICAL FORUM ACTIVITIES HELD DURING THE ACADEMIC YEAR 2023-24

SL. No.	EVENT TYPE	DATE	TITLE OF THE EVENT	RESOURCE PERSON / GUEST	MODE
1	Technical Talk	23/11/23	**Technical talk on Power Distribution Automation & Smart Grids**	**Dr. Shivakumar Aradhya,** Retired Director from CPRI,	OFFLINE
2	Training on fire safety	25/11/23	**Fire safety Training**	Fire Department, Moodabidre	OFFLINE
3	Technical talk	01/12/23	**Technical Talk on Cutting Edge Insights Into Electrical Vehicle Batteries**	**Dr. Prajof Prabhakaran,** Asst. Professor, NITK Suratkal	OFFLINE
4	Varishta Kreedakoota	23/12/23-24/12/23	**VARISHTA KREEDAKOOTA**	**Shri. Ravi Katpadi** **Shri. K Krishna Raja Hegde**	OFFLINE
5	Technical talk	22/02/24	**Technical talk on Research Facilities For Explosive Phenomena And Their Applications**	**Dr . Daisuke inao ,** Technical Faculty , Institute Of Industrial Nanomaterials, Kumamoto University, Japan	OFFLINE
6	Technical Fest	03/05/2024 04/05/2024	**TECHNICAL FEST**		
7	Technical Talk	05/06/2024	**Technical talk on Role of Mechanical Engineers in Construction Industry**	**Mr. Jagadish** Zonal Manager, L&T Construction	OFFLINE
8	Technical Talk	10/06/2024	**Technical talk on Importance of Pre- Processor in Product development Cycle**	**Mr. Nagananda Upadhyaya** Manager, BETA-CAE Systems India	ONLINE
9	Technical Talk	10/06/2024	**Technical talk on EPILYSIS-FEA How to analyse & validate the results**	**Mr. Puneet Khanagoudra** Technical Head, BETA-CAE Systems India	ONLINE
10	Technical Talk	12/07/2024	**Technical talk on Intellectual Property Rights, Technology Transfer, And Startups**	**Dr. Shashikanth Karinka** Former HOD, NMAMIT, Nitte	OFFLINE
11	Technical Talk	23/07/2024	**Technical talk on Research Culture & Higher Education Opportunities In Japan**	**Dr. Harikrishna Bhat**	OFFLINE

Technical Talk on

POWER DISTRIBUTION AUTOMATION & SMART GRIDS

Date :23/11/2023

Venue: MBA Seminar Hall

Resource Person : Dr. Shivakumar Aradhya, Retired Director, CPRI

The Mechanical Engineering Department's Technical Forum, Mech Maestros, orchestrated a profound discourse on "Power Distribution Automation & Smart Grids." The session unfolded at the Engineering seminar hall of AIET Mijar and featured esteemed experts: Dr. Shivakumar Aradhya, Retired Director from CPRI, and Sri Ravikumar, Retired Additional Director.

The event commenced with Mr. Akshar, the Forum President from the 7th semester, extending a warm welcome to the distinguished speakers. His gracious introduction set the tone for an enlightening session. Following this, Dr. GB Vaggar, the Head of the Department, honored the speakers with a floral welcome, acknowledging their invaluable expertise and contributions to the field.

Dr. Shivakumar Aradhya and Sri Ravikumar, possessing extensive knowledge and experience, engaged the audience with their insightful perspectives on Power Distribution Automation & Smart Grids. The speakers adeptly navigated through the intricacies of the subject matter, elucidating the evolving landscape of power distribution systems and the transformative impact of smart grids.

Their discourse was comprehensive, delving into the technical nuances while maintaining accessibility for the diverse audience comprising students and faculty members. The session encapsulated the latest advancements, challenges, and the far-reaching implications of these technologies in shaping the future of energy distribution.

Throughout the session, the atmosphere crackled with intellectual energy as the audience, comprised of budding engineers and seasoned academicians, engaged fervently with the speakers. The interactive segment emerged as the pulsating heart of the event, heralding a dynamic exchange of ideas and perspectives.

Students, brimming with curiosity, animatedly raised thought-provoking queries that reverberated within the hall. Their questions, laced with a hunger for knowledge, spanned the spectrum of power distribution and smart grid technologies. Each query was a gateway to exploration, inviting the speakers to unravel the complexities and intricacies of these domains.

Dr. Shivakumar Aradhya and Sri Ravikumar, adorned with a wealth of expertise, welcomed these inquiries with open arms. With a blend of erudition and approachability, they embarked on a journey of enlightenment, meticulously addressing each query. Their responses were not mere explanations but illuminating narratives that painted a vivid picture of the technical landscape, enriching the tapestry of understanding for every attendee.

The success of the event was a testament to Mech Maestros' commitment to providing a platform for intellectual discourse and knowledge dissemination. The session not only expanded the horizons of attendees but also highlighted the critical role of such forums in fostering learning and innovation within the academic community.

The Department Technical Forum continues to stand as a beacon of knowledge and collaboration, ensuring a seamless integration of theoretical concepts with practical insights, thereby empowering future engineers to navigate the evolving landscape of technology.

REPORT ON

FIRE SAFETY TRAINING

Date: **25/11/2023**

Alva's Institute of Engineering & Technology Enhances Campus Safety with Successful Fire Safety Training. Department of Mechanical Engineering Conducts Comprehensive Training on November 25, 2023

Fire is considered the most common threat for workplace accidents & incidents. Any industry can experience an unsuspected fire at their workplace which may lead to multiple fatalities, property loss, legal complications, fines & imprisonment. To avoid these consequences, an organization should design proper fire control mechanisms at their facilities & create awareness among the workers through training.

Fire safety training educates a set of practices & procedures to minimize the destruction caused by fire hazards. The skill & knowledge acquired through these trainings equip the learners, to combat fire in any unanticipated fire breakout. Also, enable the delegate to recognize the workplace fire hazards prior & ensure adequate control measures are in place.

In a proactive move to ensure the safety and well-being of its campus community, Alvas Institute of Engineering & Technology organized a thorough Fire Safety Training on November

25, 2023. The training, spearheaded by the Department of Mechanical Engineering, aimed to equip faculty, staff, and students with essential knowledge and skills for effective fire prevention and emergency response.

Overview: The Fire Safety Training, held at various locations within the campus, covered a wide range of topics crucial for maintaining a safe and secure environment. Led by certified fire safety experts, the sessions addressed fire prevention measures, emergency evacuation procedures, proper usage of firefighting equipment, and communication protocols during crises.

Active Participation: The training saw active participation from diverse groups, including faculty members, administrative staff, and students from various departments. Interactive discussions, hands-on exercises, and practical demonstrations kept the participants engaged throughout the sessions.

Key Highlights:

- **Fire Prevention Measures:** Participants received insights into identifying potential fire hazards and adopting best practices to prevent fires in an academic setting.
- **Emergency Evacuation Procedures:** Detailed explanations of evacuation routes and assembly points were provided, accompanied by practical demonstrations of fire drill procedures.
- **Usage of Fire Safety Equipment:** The attendees gained hands-on experience in the proper use of fire extinguishers, fire blankets, and other firefighting equipment, with a focus on understanding different types of fire extinguishers and their applications.
- **Communication Protocols:** The importance of establishing effective communication channels during emergencies was emphasized, along with the roles of designated personnel in coordinating evacuation efforts.

Feedback and Future Initiatives: A feedback session at the conclusion of the training revealed positive responses from the participants. Many expressed appreciation for the practical approach to learning and suggested regular follow-up sessions and drills to reinforce the acquired knowledge.

TECHNICAL TALK ON

CUTTING-EDGE INSIGHTS INTO ELECTRICAL VEHICLE BATTERIES

Date: **01/12/2023**

Resource Person : **Dr. Prajof Prabhakaran,**

Designation: **Asst. Professor, NITK Suratkal**

Introduction: In a ground-breaking technical talk held at [Venue], renowned expert Dr. Prajof Prabhakaran shared pivotal insights into the advancements and challenges shaping the future of electric vehicle (EV) batteries. The event drew a diverse audience, including industry professionals, researchers, and enthusiasts eager to stay at the forefront of EV technology.

Key Highlights:

1. **In-Depth Analysis of Battery Chemistry:** Dr. Prabhakaran commenced the talk with an in-depth analysis of the intricate chemistry behind electric vehicle batteries. Attendees gained valuable insights into the latest advancements in battery technologies, including discussions on lithium-ion, solid-state, and other emerging battery types.
2. **Energy Density Breakthroughs:** The talk delved into the critical aspect of energy density and its implications for EV range and efficiency. Dr. Prabhakaran presented

cutting-edge research and breakthroughs aimed at enhancing energy density in electric vehicle batteries.

3. **Charging Infrastructure and Fast-Charging Technologies:** A significant portion of the talk was dedicated to the current state and future projections of EV charging infrastructure. Attendees learned about the latest developments in fast-charging technologies, addressing concerns about accessibility and convenience for EV owners.
4. **Safety Considerations and Innovations:** Dr. Prabhakaran emphasized the paramount importance of safety in electric vehicle batteries. He discussed ongoing research and innovations designed to enhance the safety features of batteries, alleviating concerns associated with overheating and other potential risks.
5. **Environmental Impact and Sustainable Practices:** The environmental impact of electric vehicle batteries was a key topic. Dr. Prabhakaran shed light on sustainable practices in battery production, recycling methods, and the industry's efforts to minimize its ecological footprint.

Conclusion: Dr. Prajof Prabhakaran's technical talk proved to be an enlightening experience, offering attendees a comprehensive overview of the current state and future trends in electric vehicle battery technology. As the world transitions towards cleaner and sustainable transportation, the insights shared during this event will undoubtedly play a crucial role in shaping the future of electric mobility.

REPORT ON VARISHTA KREEDAKOOTA -2023-24

Objective :

1) Traditional sports events help preserve and promote cultural heritage. They often showcase activities that have been passed down through generations and are integral to a community's identity.
2) Traditional sports events provide opportunities for people, especially the younger generation, to learn about their cultural history, values, and customs
3) To improve the physical & mental strength of students

A sequel of the most awaited event "Varishta Kreedha Koota" which is a collection of traditional games of different parts of India which are vanishing from the land are recalled once again by Alva's Education Foundation (AEF) students which were organized by the Department of Mechanical Engineering Forum team "Mech Meastroes" at Alva's Institute of Engineering Campus on 23/12/23 & 24/12/23.

Mr Ravi Katpadi , social worker along With Mr. Krishnaraj Hegde Ex President APMC, Dakshina Kannada who inaugurated the event, called upon the young students to focus on preserving the ancient culture of thecountry by continuing playing rural sports and games. Modern games like cricket and football should not take away the shine of the rural games, he added.

During the inauguration function, Mr. Vivek M alva, managing trustee, AEF Dr. Peter Fernandes, Principal AIET, Dr. G B Vaggar, HOD Mech Engineering, Prof. Hemanth Suvarna Forum coordinator and Mr. Chiranth President, MechMaestroes were present.

The day has provided that, Victory is not the sole intention, but the spirit of playing together.

A total of around 500 students participated in the games & related activities which were conducted for two days. A core team comprising of 22 students was involved in the execution of this program.

The money we collected from the event is used for charity. A total of Rs. 20,500 was generated from the event & the same amount is Donated to Mr. Ravi Katpadi.

Outcome of the event :

Students have enjoyed & learned our traditional games, they realized the importance of sportsmanship in their daily life.

A total amount of Rs. 20,500 was collected & donated this amount to Mr. Ravi Katpadi for his charity causes .


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TECHNICAL TALK ON
RESEARCH FACILITIES FOR EXPLOSIVE PHENOMENA AND THEIR APPLICATIONS

Date: **22/02/2024**

Resource Person : **Dr . Daisuke inao ,**

Designation : **Technical Faculty , Institute Of Industrial Nanomaterials, Kumamoto University, Japan**

Explosive phenomena have significant implications across various fields, including defense, mining, engineering, and scientific research. Understanding the behaviour of explosives and their applications requires sophisticated research facilities equipped with state-of-the-art instrumentation and methodologies. This report delves into the advancements made in research facilities dedicated to studying explosive phenomena and their diverse applications.

Explosive phenomena have long captivated the attention of scientists, engineers, and innovators due to their immense potential and profound impact across numerous fields. From military applications to industrial processes and scientific research, the study of explosives and their behavior is paramount for advancing technology and ensuring safety. To delve deeper into the complexities of explosive phenomena and harness their applications, specialized research facilities have emerged as crucibles of innovation and discovery.

These research facilities serve as hubs of exploration, equipped with cutting-edge instrumentation, state-of-the-art laboratories, and interdisciplinary expertise. Their mission extends beyond mere observation, aiming to unravel the underlying mechanisms governing explosive reactions, optimize performance, and explore novel applications. As such, they play a pivotal role in shaping our understanding of explosives and driving advancements that transcend traditional boundaries.

In this introductory exploration, we embark on a journey through the diverse landscape of research facilities dedicated to explosive phenomena and their applications. From high-speed imaging laboratories capturing split-second events to expansive computational centers simulating complex detonation processes, each facility represents a nexus of scientific inquiry and technological innovation. By shedding light on these facilities, we aim to uncover the essential infrastructure driving advancements in explosives research and pave the way for transformative applications in the realms of defense, industry, and beyond.

Research facilities dedicated to explosive phenomena and their applications have evolved significantly, driven by advancements in technology and interdisciplinary collaboration. High- speed imaging, shock physics laboratories, computational modeling centers, explosives chemistry laboratories, field test sites, and collaborative research networks collectively contribute to advancing our understanding of explosives and enhancing their diverse applications across various industries. Continued investment in research infrastructure and collaborative efforts will further propel innovations in this critical field.

TECHNICAL FEST

MECHXTROME

Every academic year Department of Mechanical Engineering organizes an intra-college technical fest for the aspirants assembling from various engineering colleges with a very high competitive spirit to participate and with a strong determination to include their achievements & accomplishments to their resumes.

These fests are organized every year to provide a platform for the students to showcase their talent with a competitive spirit. The event was successful enough to attract as many as 150 registrations across the region for a two-day state-level fest which includes all the events. The event was held on03/05/2024 & 04/05/2024.

Students actively participated in all the events and presented their work. The fest was executed with 09 events planned and organized at its best quality. Focusing on the types of events to include in the fest was decided consideration, with little emphasis on the fun full events behind the scene.

The events like paper presentations, poster presentations, project expo, Automobile quiz, caed modelling and many more events were equally planned, and executed and have managed to gather maximum response

<table>
<tr><th colspan="5">TECHNICAL FEST –03/05/2024
SCHEDULE</th></tr>
<tr><th>9:30 AM- 10:30 AM</th><th>10:30 AM -11:30 AM</th><th></th><th>2:00 PM- 3:00 PM</th><th>3: 30PM-4:30 PM</th></tr>
<tr><td>AUTOMOBILE QUIZ
Staff: Mr. Hemanth
Mr. Praveen K C

Venue: 401 (mech block)</td><td>TECHNICAL PAPER PRESENTATION
Staff: Dr. Satyanarayan
Dr. Suresh P S
Dr. Kumarswamy M C
Venue: CAMD LAB</td><td rowspan="3">LUNCH BREAK</td><td>GREEN SAND MOULDING
Staff: Mr. Ganesh M R
Mr. Deepak Kothari
Venue: Foundry & FORGING LAB</td><td>WATER ROCKET
Staff: Mr. Hemanth

Venue: Basket Ball Court</td></tr>
<tr><th colspan="2">10:30 AM-12:30 AM</th><th>2:00PM- 3:00 PM</th><th>3: 30PM-4:30 PM</th></tr>
<tr><td colspan="2">CAD Drawing
Staff: Dr. G B Vaggar
Mr. Srinivas C S
Venue: CAMD LAB</td><td>POSTER MAKING
Staff: Mr. Pramod V B
Student: Mr. Anvesh
Mr. Samarth
Venue: 401 (mech block)</td><td>AUTOMOBILE PARTS IDENTIFICATION
Staff: Mr. Kiran C H
Venue: AUTO CLUB</td></tr>
</table>

TECHNICAL FEST –04/05/2024 SCHEDULE	
9:30 AM- 10:30 AM	**10:30 AM -11:30 AM**
CLAY MODELLING Staff: Mr.Ganesh M R **Venue: FOUNDRY FORGING LAB**	**TECHNICAL PICK & SPEAK** Staff: Mr. Sharatchandra Prabhu **Venue: 401 (mech block)**
9:30 AM-12:30 AM	
TECHNICAL TREASURE HUNT **Staff: Mr. Pramod Kumar N** **Venue: AIET CAMPUS**	

CAED MODELLING EVENT

Venue: CAMD LAB

Introduction

The Department of Mechanical Engineering organizing MECHXTROME Tech Fest is an annual event that brings together students, and enthusiasts to showcase innovations, engage in competitions, and discuss advancements in mechanical engineering. One of the key highlights of this event is the CAED (Computer-Aided Engineering Design) Modeling competition, which emphasizes the integration of technology in engineering design and problem-solving.

Objectives

The primary objectives of the CAED Modeling competition are:

To encourage participants to utilize computer-aided design software for engineering applications.

To foster creativity and innovation in design.

To provide a platform for demonstrating proficiency in CAED tools.

Event Structure

The CAED Modeling competition is structured in several stages:

Preliminary Round: Participants submit initial design concepts based on given criteria. These submissions are evaluated on creativity, feasibility, and adherence to specifications.

Final Round: Shortlisted participants from the preliminary round compete in a live modeling challenge. They are given a design problem and a fixed time to create a detailed model using CAED software.

Participation

Participants in the CAED Modeling competition come from various backgrounds, including:

Undergraduate students in mechanical engineering. Enthusiasts with a keen interest in CAED.

Software Tools

Commonly used CAED software tools in the competition include:

Solid Edge: Known for its powerful simulation capabilities and intuitive interface.

Evaluation Criteria

The designs are evaluated based on:

Accuracy and Precision: How well the model adheres to the given specifications and dimensions.

Innovation and Creativity: The uniqueness and originality of the design.

Presentation: Clarity and professionalism in presenting the final model.

Complexity: The level of detail and complexity handled in the design.

Highlights

Innovative Designs: Participants showcased groundbreaking designs, including advanced mechanical systems and novel engineering solutions.

Conclusion

The CAED Modeling competition at the Mechanical Engineering Tech Fest successfully highlighted the importance of computer-aided design in modern engineering. It provided a platform for participants to demonstrate their skills.

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TECHNICAL PAPER PRESENTATION

Overview

The technical paper presentation competition was held on May 3, 2024, with the aim of providing a platform for students to showcase their research, critical thinking, and communication skills. A diverse range of papers were presented, covering various technical domains.

Event Highlights

Participation: Around 30 participants have participated, representing different departments . The presented papers encompassed a wide spectrum of technical areas, including [mention some key topics].

Presentations: The presentations were well-structured, informative, and delivered with confidence. The students demonstrated a deep understanding of their research topics and were able to effectively convey their key findings and insights.

Judging Criteria: The presentations were evaluated based on [mention the judging criteria, such as clarity, originality, technical content, and presentation skills].

Winners: The [mention the winners] team was declared the overall winner, impressing the judges with their exceptional paper and presentation.

Key Takeaways

Student Engagement: The competition fostered a strong sense of engagement among the students, who were eager to share their research and learn from their peers.

Skill Development: The event provided an excellent opportunity for students to develop their technical writing, public speaking, and critical thinking skills.

Overall, the technical paper presentation competition was a resounding success, providing a valuable learning experience for all participants.

TECHNICAL TREASURE HUNT REPORT

The Department of Mechanical Engineering at AIET organized an engaging and challenging Technical Treasure Hunt for the students on May 4, 2024. The event aimed to foster teamwork, critical thinking, and technical knowledge among the participants. A total of 10 teams, each comprising 4 members, participated in the hunt.

Objective

The primary objective of the Technical Treasure Hunt was to engage students in a series of technical challenges and puzzles that required both theoretical knowledge and practical skills to solve. The event was designed to**:**

- Encourage collaboration and teamwork.
- Enhance problem-solving abilities.
- Apply technical knowledge in practical scenarios.
- Develop time management and strategic planning skills.

Event Structure

Registration and Briefing:

The event commenced with the registration of participants at 9:30 AM, followed by a detailed briefing session. The rules and instructions for the treasure hunt were explained to all teams.

Distribution of Clues:

Each team was given the first clue at 10:00 AM.

The clues were technical in nature, requiring the application of engineering principles to decode and find the next location.

Hunt Progression:

Teams followed a sequence of clues, with each clue leading them to a specific location on the AIET campus. At each location, teams encountered a task or puzzle that needed to be completed to receive the next clue

Completion and Time Tracking:

The time taken by each team to complete the treasure hunt was recorded.The first and second teams to find the final treasure were determined based on their completion time.

Clue Details and Challenges

The treasure hunt included a variety of technical challenges, such as: Mechanical Puzzles: Requiring knowledge of mechanical systems and principles.Circuit Assembly: Tasks involving basic electronics and circuit design. Engineering Problems: Situations that required the application of mechanical engineering concepts to solve practical problems. Each clue was carefully designed to test the participants' technical knowledge and problem-solving skills, ensuring a balanced mix of difficulty levels to keep the competition engaging and fair.

Winners and Prizes

The performance of each team was assessed based on the time taken to complete the treasure hunt. The first and second prize winners were as follows:

First Prize-Team

Second Prize:Team

The winning teams were awarded prizes during a concluding ceremony held at 4:30 PM.

Conclusion

The Technical Treasure Hunt was a resounding success, providing an excellent platform for students to apply their technical skills in a fun and competitive environment. The event not only enhanced the participants' engineering knowledge but also promoted teamwork and strategic thinking.

The Department of Mechanical Engineering at AIET looks forward to organizing similar events in the future to continually engage and challenge its students.

A REPORT ON AUTOMOBILE QUIZ

On May 3, 2024, the Department of Mechanical Engg, Alvas Institute of Engineering & Technology hosted an exciting Automobile Quiz as a part of its annual technical fest. The event saw enthusiastic participation from students across various engineering disciplines, highlighting their knowledge and passion for the automotive industry.

Prof. Hemanth Suvarna was the Staff coordinator & Mr. Nithin was the student Coordinator of the event.

Objective

The primary objective of the quiz was to encourage students to delve deeper into the automotive field, enhancing their understanding of theoretical concepts and practical advancements in automobile technology. The event also aimed to foster participants' competitive spirit while promoting teamwork and collaboration.

Participants

The quiz witnessed the participation of about 25 students. The participants included from inter-branch engineering streams, showcasing the interdisciplinary interest in automotive technologies.

Quiz Structure

The quiz was divided into three rounds:

1. **Preliminary Round**: A written test consisting of multiple-choice questions covering fundamental concepts of automobile engineering, recent technological advancements, and general knowledge about the automotive industry. The top 10 teams from this round advanced to the semi-finals.
2. **Semi-Final Round**: This round involved a buzzer-based quiz where teams had to answer questions related to automotive mechanics, history, and current trends. The top 5 teams from this round progressed to the finals.
3. **Final Round**: The final round was an interactive and intense session with complex questions focusing on advanced automotive technologies, industry case studies, and problem-solving scenarios. This round tested the depth of knowledge, analytical skills, and quick thinking of the participants.

Conclusion

The Automobile Quiz at the Alva's Institute of Engineering & Technology was a grand success, providing a platform for students to showcase their knowledge and passion for the automotive industry. The event not only stimulated intellectual curiosity but also encouraged students to stay updated with the latest developments in the field. The organizing committee received commendable feedback from participants and attendees, ensuring that such events will continue to be a part of the institute's annual technical fest.


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Green Sand moulding Competition

Department of Mechanical engineering was organized Technical fest on 03/05/2024 in AIET campus for all branches of engineering students. Many completions was organized by the department. In those events Green sand moulding competition was organized in Foundry and Forging lab. Students created many casting moulds by using green sand according to given model image and specifications.


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PICK & SPEAK

Venue: CAMD LAB

Introduction

The department of Mechanical Engineering organizing **MECHXTROME** Tech Fest is an annual event that brings together students, enthusiasts to showcase innovations, engage in competitions, and discuss advancements in mechanical engineering. One of the key highlights of this event is the Pick and Speak, which emphasizes the communication skill of student

Objectives

The primary objectives of the Pick and Speak are:

1. To encourage participants to utilize communication skills
2. To foster creativity and innovation in thinking.
3. To provide a platform for analyze and present about the topic requirement.

Event Structure

The Pick and Speak was single stage participants are required to pick a topic from the box and present for tree minutes

Participation

Participants in the Pick and Speak come from various backgrounds, including:

- Undergraduate students in mechanical and Agriculture engineering

Winners and Awards

The competition concluded with an award ceremony where winners were recognized for their outstanding designs.

Conclusion

Pick and Speak competition at the Mechanical Engineering Tech Fest successfully highlighted the importance of communication skill and understanding of technical term. It provided a platform for participants to demonstrate their skills..

APPENDIX

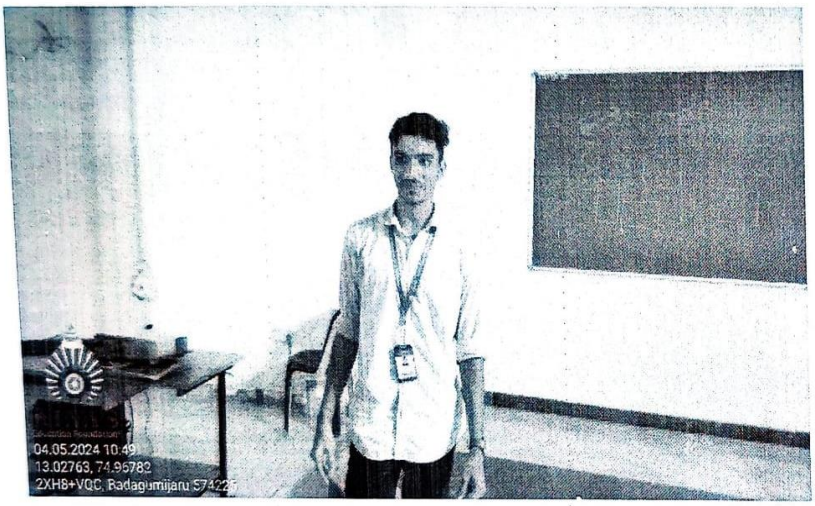


Photo1. Students participation.

LIST OF PRIZE WINNERS

SL. NO.	EVENT	PRIZE WINNER & PLACE	DEPARTMENT
1	TECHNICAL PAPER PRESENTATION	1. Mr. Tejas Kumar	Agriculture Engineering
2	AUTOMOBILE QUIZ	1. Mr. Chiranth H S 2. Mr. Manoj Kumar Karnam	Mechanical engg
3.	CAD Modelling	1. Mr. Manoj S C	Mechanical engg
4	TECHNICAL PICK & SPEAK	1. Mr. Chiranth H S	Mechanical engg
5	GREEN SAND MODELLING	1. Mr. Abhinandan	Computer science department
6	POSTER MAKING	1. Ms.Chaya	Computer science Design engg
7	TREASURE HUNT	**1. TEAM GLADIATORS** a) Sushan b) Nishanth c) Sunil d) Shyamprasad **2. TEAM MIND INDEX** a) Preeti b) Reshma c) Namitha d) Dhanya	MBA

A TECHNICAL TALK ON

ROLE OF MECHANICAL ENGINEERING IN CONSTRUCTION INDUSTRY

Date: **05/06/2024**

Resource Person: **Mr. Jagadish**

Designation: **Zonal Manager L&T Constructions**

Mechanical Engineers plays a pivotal role in the construction industry. While often overlooked, the contributions of mechanical engineers are the bedrock upon which the modern built environment stands tall.

From the towering skyscrapers that pierce the skyline to the humble homes that shelter us, mechanical engineering is the unseen force that ensures comfort, safety, and efficiency. It is the discipline that transforms lifeless structures into vibrant, functional spaces.

Mechanical engineers are the architects of the building's inner workings. They design, install, and maintain the intricate systems that regulate temperature, purify air, transport people, and safeguard lives. The heating, ventilation, and air conditioning systems that create a pleasant atmosphere, the plumbing that ensures clean water supply and waste disposal, the fire protection systems that provide a safety net, and the elevators that defy gravity – all are the brainchild of mechanical engineers.

Beyond comfort and safety, mechanical engineers are at the forefront of sustainable construction. They innovate to reduce energy consumption, minimize environmental impact, and maximize resource efficiency. By incorporating renewable energy sources and optimizing system performance, they contribute to a greener and more sustainable future.

Core Responsibilities:

- **Design and Optimization of Mechanical Systems:** Mechanical engineers design and optimize systems like HVAC (heating, ventilation, and air conditioning), plumbing, fire protection, and elevators. They ensure these systems are efficient, safe, and integrated seamlessly into the building design.
- **Project Planning and Management:** They are involved in project planning, analyzing mechanical aspects, ensuring compliance with regulations, and overseeing the installation and maintenance of mechanical equipment.
- **Energy Efficiency and Sustainability:** Mechanical engineers play a vital role in designing energy-efficient systems, reducing the environmental impact of buildings, and incorporating sustainable technologies.
- **Problem-Solving and Innovation:** They address challenges related to mechanical systems, find innovative solutions, and improve the overall performance of buildings.

Specific Areas of Focus:

- **HVAC Systems:** Designing and implementing heating, ventilation, and air conditioning systems to maintain optimal indoor air quality and comfort.
- **Plumbing Systems:** Designing and installing water supply and drainage systems, ensuring proper sanitation and water efficiency.
- **Fire Protection Systems:** Designing and installing fire suppression systems, emergency exits, and other safety measures to protect occupants.
- **Elevators and Escalators:** Designing, installing, and maintaining elevators and escalators for safe and efficient vertical transportation.

The construction industry is undergoing a digital transformation, and mechanical engineers are leading the charge. They are harnessing the power of technology to develop smart buildings that optimize energy usage, enhance occupant comfort, and improve overall building performance.

In conclusion, mechanical engineering is an indispensable component of the construction industry. The expertise and innovation of mechanical engineers are essential for creating buildings that are not only structurally sound but also comfortable, efficient, and sustainable.

A TECHNICAL TALK Report

ON

IMPORTANCE OF PRE-PROCESSOR IN PRODUCT DEVELOPMENT CYCLE

Date: **10/06/2024**
Resource Person**: Mr. Nagananda Upadhyaya**

Designation: **Manager, BETA-CAE Systems India**

Pre-Processor In Product Development Cycle is a critical, yet often overlooked aspect of the product development cycle: the pre-processor. While it may not be the most glamorous component, its significance cannot be overstated.

A pre-processor, in essence, is a software tool that prepares data for further processing. This might involve tasks such as code conversion, macro processing, file inclusion, and conditional compilation. While these may sound technical, their impact on the overall product development process is profound.

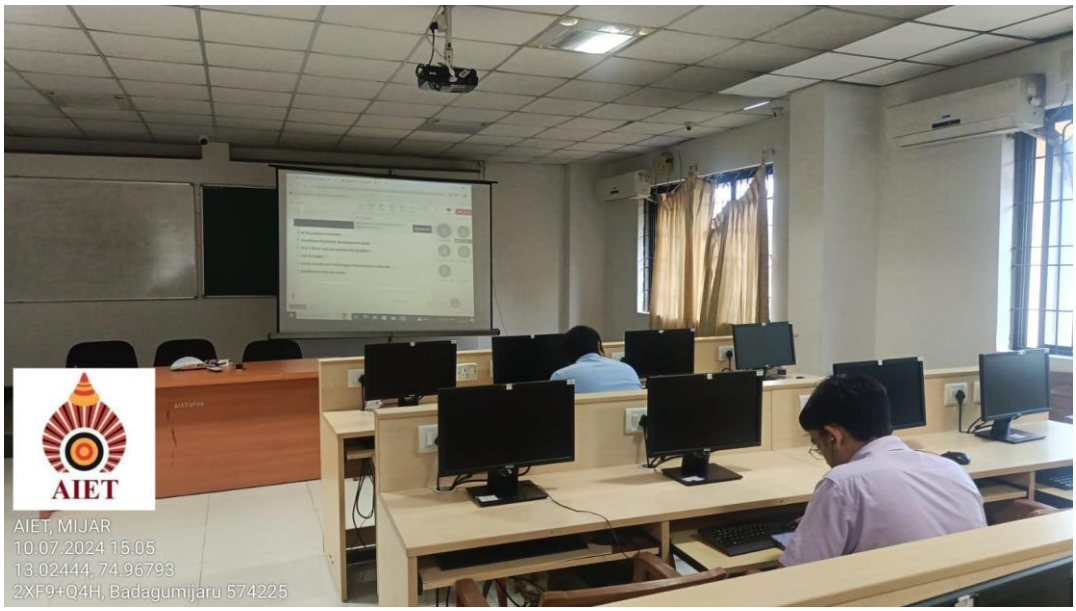
Let's consider the analogy of a chef preparing ingredients before cooking. The pre-processor is like the chef, meticulously cleaning, chopping, and marinating the ingredients to ensure the final dish is perfect. Similarly, the pre-processor transforms raw data into a consumable format, optimizing it for subsequent stages of the development process.

Importance of Pre- processor

- **Efficiency:** By automating routine tasks, pre-processors save developers valuable time and effort. This allows them to focus on core functionalities and problem-solving.
- **Error Reduction:** Pre-processors can identify potential errors or inconsistencies in the data early in the development cycle, preventing costly mistakes down the line.
- **Portability:** They can help to make code more portable across different platforms and environments.
- **Optimization:** By preparing data in an optimal format, pre-processors can enhance the performance of subsequent processes.
- **Abstraction:** They can provide a higher level of abstraction, making the code more readable and maintainable.

In conclusion, pre-processors are indispensable to the product development process. They ensure data accuracy, streamline complex tasks, enhance efficiency, facilitate integration, support decision-making, and enable scalability. Their role, though often behind the scenes, is crucial in transforming innovative concepts into successful products.

As we continue to advance in technology and innovation, let us recognize and appreciate the vital contributions of pre-processors. They are the unsung heroes of product development, paving the way for success and excellence in every stage of the process.

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TECHNICAL TALK REPORT

ON

INTRODUCTION TO EPILYSIS -FEA SOLVER

Resource Person: Mr. Puneet Khanagoudra

Designation: Chief Technical Engineer, BETA-CAE Systems India

Date: **10/06/2024**

The EPILYSIS FEA solver, developed by BETA CAE Systems, is a comprehensive tool designed for Finite Element Analysis (FEA), integrating decades of expertise from the CAE community. This solver addresses various engineering disciplines, including Structural, Noise, Vibration, Harshness (NVH), and Optimization, making it a versatile option for various industries It is known for its robustness, versatility, and high performance in solving various types of finite element problems.

Its Core Features includes following aspects

Solver Capabilities:

Linear and Nonlinear Analysis: EPILYSIS can perform both linear static and dynamic analysis as well as nonlinear analysis involving large deformations, plasticity, and hyperelastic materials.

Thermal Analysis: It supports both steady-state and transient thermal analysis.

Coupled Field Analysis: EPILYSIS can handle problems that involve multiple physical phenomena simultaneously, such as thermo-mechanical coupling.

Element Types:

EPILYSIS offers a variety of element types including 1D, 2D, and 3D elements. This includes beam, shell, solid, and hybrid elements, allowing for detailed modeling of different structures and materials.

Solver Algorithms:

Direct Solvers: These include methods like LU decomposition, which provide exact solutions to the system of equations but can be computationally expensive for very large problems.

Iterative Solvers: These are used for larger problems where direct solvers are not feasible. They include methods like Conjugate Gradient (CG) and Generalized Minimal Residual (GMRES) methods.

Mesh Generation:

EPILYSIS includes advanced meshing capabilities that support both automatic and manual mesh generation. It handles structured and unstructured meshes and offers refinement options to ensure accurate results.

Pre-Processing and Post-Processing:

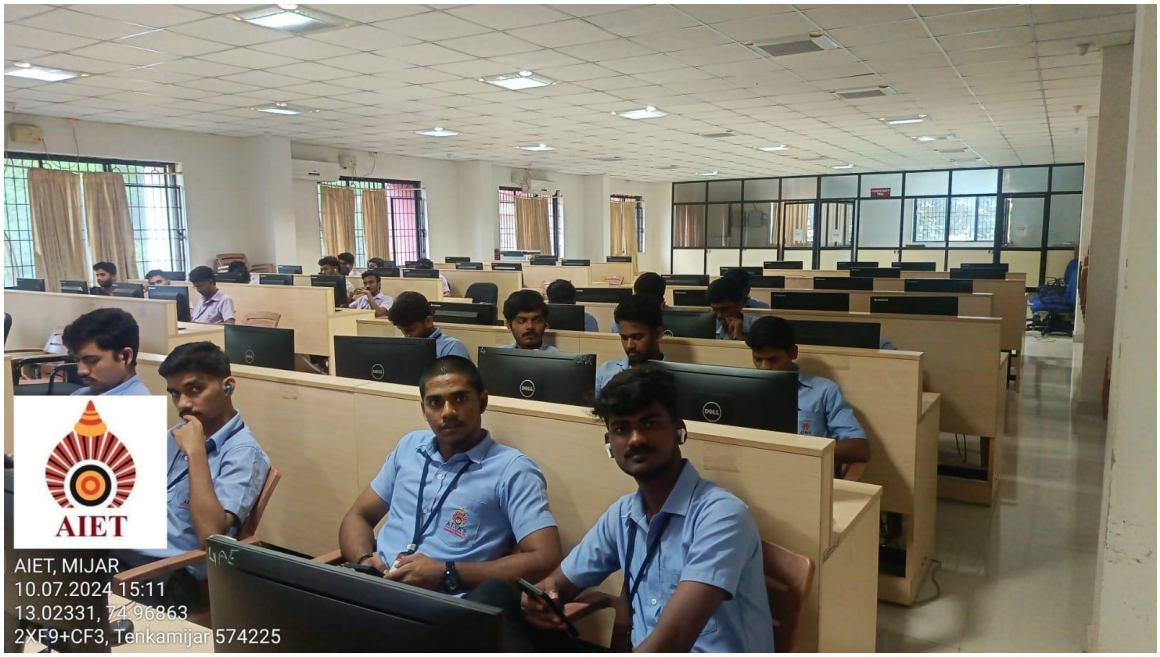
The pre-processing phase involves setting up the model, defining material properties, boundary conditions, and loads. EPILYSIS provides a user-friendly interface for these tasks.

For post-processing, EPILYSIS can visualize results using contour plots, deformed shape plots, and other graphical representations to interpret the results effectively.

Scalability and Performance:

Parallel Computing: EPILYSIS is optimized for parallel processing, leveraging multi-core processors and distributed computing environments to handle large-scale simulations efficiently.

Optimization Techniques: The solver employs various optimization techniques to reduce computational time and memory usage, making it suitable for high-performance computing scenarios.



User Interface and Integration:

Graphical User Interface (GUI): EPILYSIS provides a comprehensive GUI for ease of use. This includes tools for model setup, meshing, and result analysis.

APIs and Scripting: For advanced users, EPILYSIS offers APIs and scripting capabilities to automate tasks and integrate with other software tools.

Applications of EPILYSIS FEA are as follows

EPILYSIS is used in various fields including:

Structural Engineering: For analysing stresses, strains, and displacements in structures such as bridges, buildings, and machinery.

Automotive Industry: To simulate crash tests, fatigue analysis, and vehicle performance.

Advantages

Accuracy and Reliability: EPILYSIS is known for its high accuracy in solving complex problems, which is crucial for critical engineering applications.

Versatility: It supports a wide range of analyses and element types, making it suitable for diverse engineering problems.

Efficiency: The solver's advanced algorithms and parallel processing capabilities ensure that it performs well even with large-scale models.

In summary, EPILYSIS is a powerful FEA solver with a broad range of capabilities designed to handle complex engineering simulations. Its advanced algorithms, user-friendly interfaces, and high-performance features make it a valuable tool for engineers and researchers across various industries. EPILYSIS represents a modern solution in the field of FEA, combining advanced computational techniques with user-friendly interfaces and robust analytical capabilities. Its comprehensive feature set makes it a valuable tool for engineers seeking to enhance their design processes across multiple sectors, from automotive to aerospace and beyond.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A Technical Talk Report

on

INTELLECTUAL PROPERTY RIGHTS, TECHNOLOGY TRANSFER, AND STARTUPS

Date: **12/07/2024**

Resource Person: **Dr. Shashikant Karinka**

Designation: **Former HOD, Dept. of Mechanical Engg. NMAMIT, Nitte**

On 12/07/2024 Department of Mechanical Engg has organized a Technical talk by Dr. Shashikant Karinka Former HOD, Dept. of Mechanical Engg. NMAMIT, Nitte , on Intellectual property Rights , technology transfer & start ups. Dr. Karinka, a renowned expert in the field, shared his extensive knowledge and experience, providing valuable insights for entrepreneurs, innovators, and industry professionals.

Overview of Intellectual Property Rights

Dr. Karinka began by defining Intellectual Property (IP) and its various forms, including patents, trademarks, copyrights, and trade secrets. He emphasized the importance of IP in protecting innovations and ensuring that creators can benefit from their inventions. Dr. Karinka explained that strong IP protection encourages innovation by providing a framework for creators to secure economic returns from their work.

Key Points on IP Rights:

- **Patents:** Protect inventions and provide exclusive rights to the inventor for a specific period.
- **Trademarks:** Protect brand names, logos, and symbols that distinguish goods or services.
- **Copyrights:** Protect literary and artistic works, providing exclusive rights to reproduce, distribute, and perform the work.
- **Trade Secrets:** Protect confidential business information that provides a competitive edge.

Technology Transfer

Dr. Karinka highlighted the process of technology transfer, which involves the movement of knowledge, skills, and technologies from research institutions to the marketplace. He discussed the critical role of universities and research organizations in generating innovations that can be commercialized.

Dr. Shashikant Karinka Addressing the gathering

Key Elements of Technology Transfer:

- **Licensing Agreements:** Allowing third parties to use IP in exchange for royalties or other forms of compensation.
- **Spin-offs and Startups:** Creating new companies to commercialize technologies developed within research institutions.
- **Collaborative Research:** Partnering with industry to develop and commercialize new technologies.

Role of IP in Startups

Dr. Karinka stressed the importance of IP for startups, noting that IP assets can be more valuable than physical assets. He explained that a strong IP portfolio can attract investors, provide a competitive edge, and open up revenue streams through licensing and partnerships. He also Addressed the challenges associated with IP and technology transfer. He noted that securing IP rights can be costly and time-consuming. Additionally, navigating the complex landscape of IP law requires specialized knowledge, which may be a barrier for some startups and small businesses. Throughout his talk, Dr. Karinka provided several case studies and real-world examples to illustrate the concepts discussed. He showcased successful startups that

leveraged strong IP portfolios to achieve market success and highlighted the role of technology transfer offices in facilitating these successes.

Conclusion

Dr. Karinka concluded his talk by emphasizing the critical role of IP rights in fostering innovation, facilitating technology transfer, and supporting the growth of startups. He encouraged entrepreneurs and researchers to prioritize IP protection and seek expert advice to navigate the complexities of IP law.

Final Takeaways:

- **Importance of IP:** Essential for protecting and monetizing innovations.
- **Technology Transfer:** Vital for moving innovations from research to the market.
- **Support for Startups:** IP rights provide a foundation for startup growth and success.

Dr. Karinka's presentation provided a comprehensive overview of the intersection of IP rights, technology transfer, and startups, offering valuable insights for all attend.

A TALK ON

RESEARCH CULTURE & HIGHER EDUCATION OPPORTUNITIES IN JAPAN

Resource person: Dr. Harikrishna Bhat

Designation: Professor & Director International collaboration at NMAMIT, Nitte.

Date: 23/07/2024

Introduction

On 23/07/24/ A talk titled " research culture & higher education opportunities in Japan" was delivered by Dr. Harikrishna Bhat. The presentation provided valuable insights into the Japanese higher education system, focusing on postgraduate studies.

Overview of Japanese Postgraduate Education

The speaker began by outlining the structure of postgraduate education in Japan, which primarily comprises Master's and Doctoral programs. A key emphasis was placed on the research-oriented nature of Japanese universities, with ample opportunities for students to engage in cutting-edge projects.

Key Points

- **Research Focus:** Japan's postgraduate programs are heavily inclined towards research, offering students the chance to contribute to the academic frontier.
- **Rigor and Standards:** The academic environment is highly competitive, requiring dedication and perseverance from students.
- **Industry Collaboration:** Many programs integrate internships and industry partnerships to provide practical experience.
- **Internationalization:** Japan is actively promoting international education with an increasing number of English-taught programs and support services for foreign students.
- **Popular Fields:** Engineering, technology, business, science, medicine, and humanities were highlighted as popular fields of study in Japan.

With many Indians studying abroad, India is the second-largest country in the world in terms of origin for international students. In spite of this, only 0.3 percent of Indian students chose Japan as their study abroad destination, making Japan the 20th most popular country.

In comparison to other South Asian nations and nations where English is an official or semi-official language, this is quite low. It is the case either because people in India may not fully understand the allure of Japan and the advantages of studying there, or because they may have some reservations about the viability of studying there.

The Japanese government started support for international students, to reserve flight tickets outside of the daily immigration limit, students can request the use of this support from their Japanese school.

Admission Process and Funding

The speaker elaborated on the admission process, emphasizing the need for a bachelor's degree, Japanese language proficiency (for most programs), academic transcripts, letters of recommendation, statement of purpose, and entrance exams.

There are a few tests which international students might have to take before they join these colleges/universities in Japan.

The EJU is one of the exam designed for international students who wants to enroll and study (undergraduate program) at Japanese universities. It measures knowledge of basic academic concepts (Science, Japan, and the World, and Mathematics), Scores of EJU are valid for two years.

This test held twice per year mainly in June and November in more than 14 countries and different cities across the world.

At least 60% of Japanese universities, including national universities require the submission of EJU scores as part of the application. There are other benefits of the EJU, some schools offer “pre-arrival admission” where students can be admitted to the school before arriving in Japan, and scholars are awarded with the honors scholarship who achieve the highest scores on the EJU.

The other test in the list includes the JLPT, it assesses non-native Japanese speakers’ ability to understand Japanese words, vocabulary, and syntax, as well as communication in Japanese. The levels range from N1 to N5, with N1 being the highest. The N5 and N4 levels assess students’ basic understanding of the language.

Funding opportunities were discussed, including government scholarships, university scholarships, and private scholarships.

Conclusion

The talk offered a comprehensive overview of post-graduation studies in Japan. The speaker's insights into the academic environment, research opportunities, and challenges were particularly valuable. The presentation generated significant interest among the audience, indicating a growing appeal of pursuing higher education in Japan.