

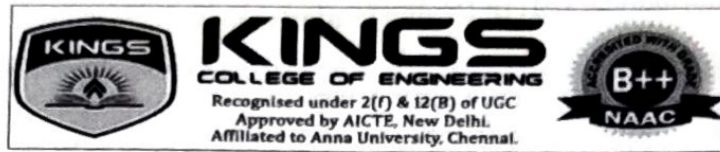
**Department of Mechanical Engineering
Academic year 2023-24 (EVEN)**

Circular

Date : 25.03.2024

This is to inform you that there will be an internal seminar going to be conducted by our department on 27.03.2024 at 12.30 P.M on the topic "The Technology ahead in Mechanical Engineering" by Dr. S. Sabanayagam, Associate Professor/Mechanical at Department Smart Classroom. Staff members are instructed to utilize the session and communicate your queries.

T. Panthiyandi
HoD/Mech 25/3/24



DEPARTMENT OF MECHANICAL ENGINEERING
ACADEMIC YEAR 2023-24 (EVEN)
INTERNAL STAFF SEMINAR REPORT

Date& time : 27.03.2024 & 12.30 P.M.
Venue : Department Smart Classroom
Topic : Seminar on "The Technology ahead in Mechanical Engineering"
Resource person : **Dr. S. Sabanayagam**,
Associate Professor,
Mechanical Engineering,
Kings College of Engineering-Punalkulam.

On behalf of the Department of Mechanical Engineering organized an Internal Seminar on "The Technology ahead in Mechanical Engineering" for faculty members of the Mechanical Department on 27.03.2024 at smart class room. The main objective of the internal seminar is to provide exposure to our faculty members on recent technologies evolving in Mechanical Engineering.

The Following Points were Discussed During the Session:

Mechanical engineering has always been at the forefront of technological innovation, driving progress in various industries. With the rapid pace of technological advancement, new developments in mechanical engineering are continually emerging. This report aims to highlight some of the upcoming technologies in the field of mechanical engineering, along with their objectives and anticipated outcomes.

1. Additive Manufacturing (3D Printing):

Objective: The objective of additive manufacturing is to revolutionize traditional manufacturing processes by enabling the production of complex geometries with reduced material waste and lead times.

Outcomes: With advancements in 3D printing technology, engineers can expect increased design freedom, improved part performance, and enhanced customization capabilities. Additionally, additive manufacturing has the potential to decentralize production and reduce supply chain dependencies.

2. Artificial Intelligence (AI) in Design Optimization:

Objective: Integrating artificial intelligence into the design process aims to automate and optimize the creation of mechanical components and systems.

Outcomes: AI-driven design optimization tools can significantly reduce the time and resources required for product development. By leveraging machine learning algorithms, engineers can explore a broader design space, identify optimal solutions, and improve performance metrics such as efficiency, reliability, and durability.

3. Robotics and Automation:

Objective: The objective of robotics and automation is to enhance productivity, efficiency, and safety across various industrial sectors.

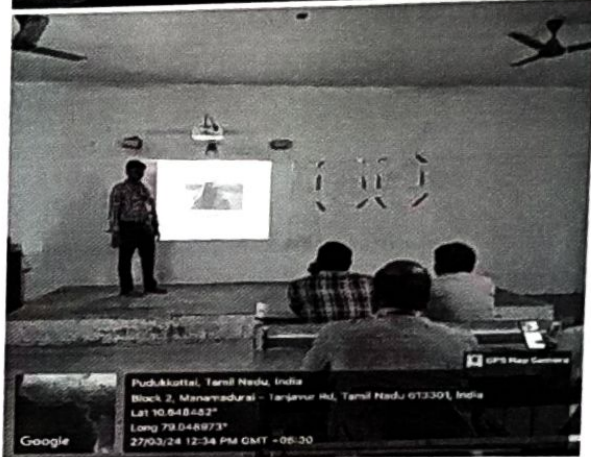
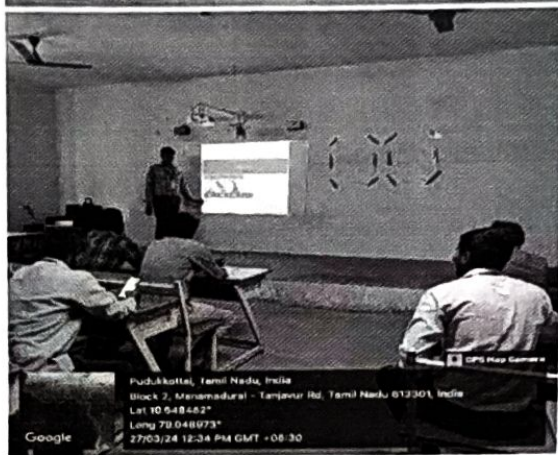
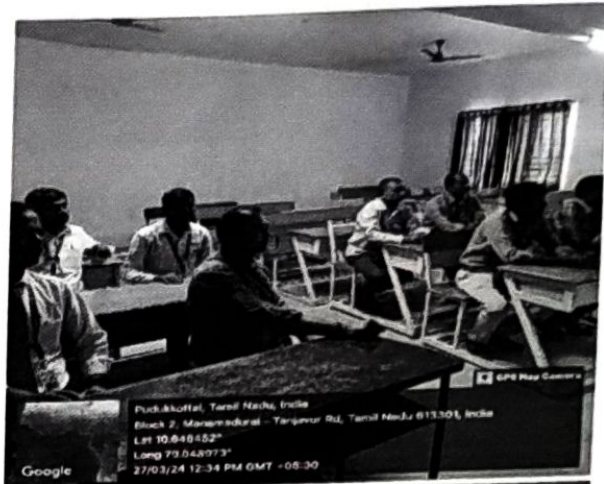
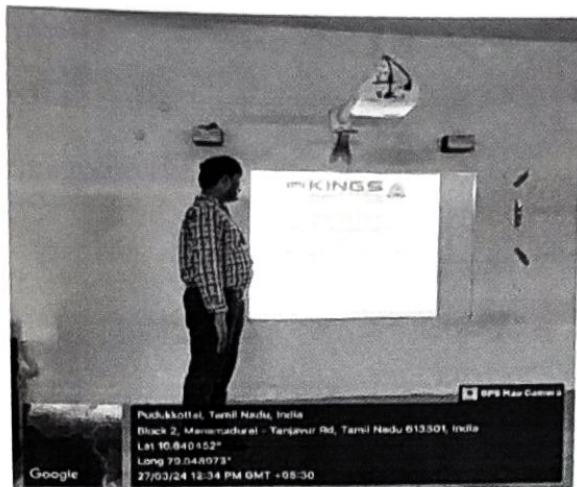
Outcomes: Advancements in robotics technology enable the deployment of autonomous systems for tasks ranging from manufacturing and assembly to inspection and maintenance. With increased reliability and flexibility, robotic solutions can streamline operations, minimize errors, and mitigate workplace hazards.

4. Sustainable Energy Technologies:

Objective: Sustainable energy technologies aim to address environmental concerns by reducing reliance on fossil fuels and minimizing carbon emissions.

Outcomes: Innovations in renewable energy systems, such as wind turbines, solar panels, and hydroelectric generators, contribute to the transition towards a more sustainable energy infrastructure. Additionally, advancements in energy storage technologies, such as battery systems and hydrogen fuel cells, facilitate the integration of renewable energy sources into existing grids.

The future of mechanical engineering is characterized by a convergence of advanced technologies aimed at addressing global challenges and driving innovation across industries. From additive manufacturing and artificial intelligence to robotics and sustainable energy, these advancements hold the promise of revolutionizing traditional practices, enhancing efficiency, and promoting sustainability. By leveraging these emerging technologies, mechanical engineers can continue to push the boundaries of what is possible, shaping a more prosperous and sustainable future.



Snapshots of the Session

Chapters Discussed:

- Additive Manufacturing.
- AI in design optimization.
- Robotics & Automation.
- Sustainable energy technologies.

Outcomes:

Upon listing of this seminar the participants can able to

- Understand the case studies and real-world applications of AM across different industries.
- Have valuable insights on how AI to revolutionize mechanical design processes by exploring advanced techniques, real-world case studies.
- Know how the robotics and automation integration in mechanical sectors that transforms traditional manufacturing paradigms into leading heightened productivity, efficiency, and safety, while also fostering innovation and skill development within the workforce.

References:

1. Journal Title: Robotics and Computer-Integrated Manufacturing

Citation: Fathi, Hamidreza, et al. "Integration of robotics and automation in manufacturing: Review and prospect." Robotics and Computer-Integrated Manufacturing, vol. 67, 2020, 101992.

2. Journal Title: IEEE Transactions on Automation Science and Engineering

Citation: Wang, Fei-Yue, et al. "Trends in robotics and automation in manufacturing." IEEE Transactions on Automation Science and Engineering, vol. 14, no. 2, 2017, pp. 948-956.

3. Journal Title: International Journal of Advanced Manufacturing Technology

Citation: Kusiak, Andrew, and Xiaoxia Huang. "Manufacturing intelligence: Trends in research and practice." International Journal of Advanced Manufacturing Technology, vol. 56, no. 9-12, 2011, pp. 1297-1310.

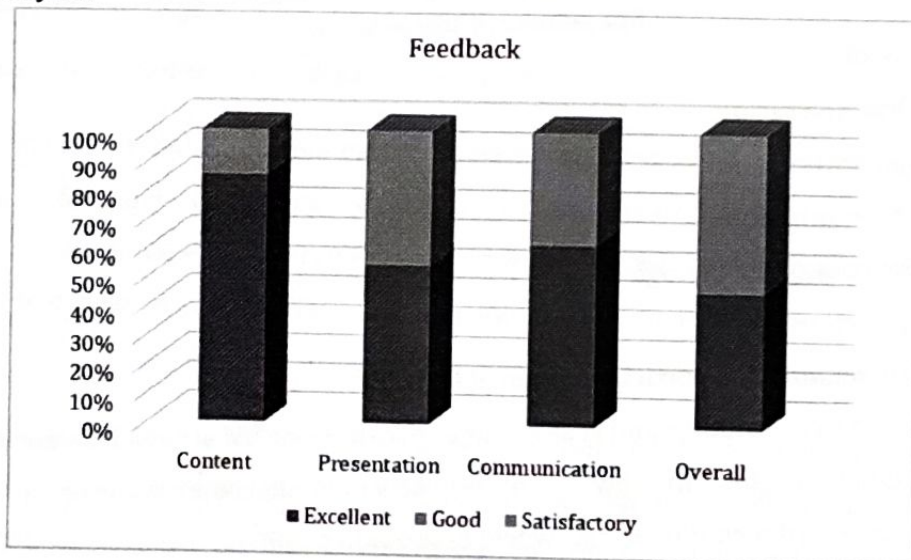
4. Journal Title: Robotics and Autonomous Systems

Citation: Sahin, Ferat. "A survey on industrial applications of robotic assembly." Robotics and Autonomous Systems, vol. 60, no. 4, 2012, pp. 541-552.

5. Journal Title: Journal of Manufacturing Systems

Citation: Xu, Xun, et al. "Robotics and automation in the food industry: Current status and future perspectives." Journal of Manufacturing Systems, vol. 53, 2019, pp. 95-106.

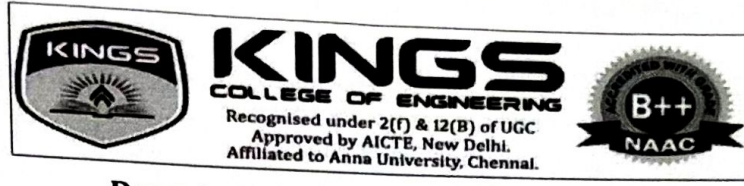
Feedback Analysis:



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Principal



Department of Mechanical Engineering
Academic year 2023-24 (EVEN)
INTERNAL STAFF SEMINAR ATTENDANCE SHEET

Date & time : 27.03.2024 & 12.30 P.M
 Venue : Department Smart Classroom
 Topic : Seminar on "The Technology ahead in Mechanical Engineering"
 Resource person : Dr. S. Sabanayagam /Mechanical

S. No	Staff Name	Signature
1	Dr. T.Pushparaj	<i>T. Pushparaj</i>
2	Dr. P.P.Shantharaman	<i>P.P. Shantharaman</i>
3	Dr. R.Shankar	<i>R. Shankar</i>
4	Mr. H. Agilan	<i>H. Agilan</i>
5	Mr. N.Magesh	<i>N. Magesh</i>
6	Dr. M. Melwin Jagadheesh Sridhar	<i>M. Melwin Jagadheesh Sridhar</i>
7	Mr. M. Sakthivel	<i>M. Sakthivel</i>
8	Mr. S. Nelson Raja	<i>S. Nelson Raja</i>
9	Mr. R. Rajadurai	<i>R. Rajadurai</i>
10	Mr. V. Aravind	<i>V. Aravind</i>
11	Mr. S. Balaganesh	<i>S. Balaganesh</i>
12	Mr. M. Vivekananthan	<i>M. Vivekananthan</i>
13	Mr. K. Rajesh Kumar	

[Signature]
 Staff In charge
 27/3/24

T. Pushparaj
 HOD/MECH
 27/3/24