



MEEEd

ASME Mechanical Engineering
Education Summit
INDIA



ENGINEERING EDUCATION SEMINAR

— EMPOWERING NEXT —
GENERATION ENGINEERS

APRIL 30, 2024 | Dr. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW

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EXECUTIVE SUMMARY

The ASME India MEEEd steering committee in association with Dr. A. P. J. Abdul Kalam Technical University, Lucknow, organised a seminar “Empowering the Next Generation Engineers” on April 30th, 2024, at AKTU Campus, Lucknow.

The seminar marked a significant milestone in addressing the evolving landscape of engineering education and preparing future engineers for the challenges and opportunities ahead. Sponsored by Altair and supported by ASME Mechanical Engineering Education Summit (MEEEd), the seminar witnessed a hybrid attendance of over 400 participants, comprising Faculty Members, Directors, Deans, training and Placement Committee Members and students, both physically and virtually.

ENGINEERING EDUCATION SEMINAR

Empowering Next Generation Engineers



April 30, 2024

Dr. A.P.J. Abdul Kalam Technical
University, Lucknow

BY
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INAUGURAL SESSION



Mr Madhukar Sharma,
President and Director,
AIPL



Prof J. P. Pandey,
Vice Chancellor,
AKTU



Prof Rajive Kumar,
Member Secretary,
AICTE



Mr Deepak Gupta, IAS,
Hon'ble Director General,
National Solar Energy
Foundation of India, For-
mer Secretary – MNRE &
Chairman UPSC

The inaugural session set the tone for the day by emphasizing the multi-faceted approach required to empower the next generation of engineers and adapt to the challenges and opportunities presented by the evolving technological landscape. Discussions revolved around integrating digital tools into the curriculum, the evolving role of engineers amidst rapid technological advancements, and the importance of fostering critical thinking and problem-solving skills.

KEY HIGHLIGHTS FROM THE SESSION

Empowering Next Generation Engineers:

- Recognizing the importance of integrating digital tools and technologies into the curriculum to prepare students for emerging job roles.

- ⦿ Stressing the importance of skill development in critical thinking, problem-solving, and holistic problem-solving approaches.
- ⦿ Highlighting the need for special extra-curricular programs, collegiate clubs, and competitions to inculcate these essential traits.
- ⦿ Need for incorporating humanities and sustainability modules into engineering curricula to foster ethical values and responsible conduct.

Industry-Academia Collaboration:

- ⦿ Proposal for curriculum reform, laboratory upgrades, aligning research priorities and technology licensing agreements with industry support.
- ⦿ Introduction of innovative models such as appointing practicing professors and integrating industry expertise into academia.
- ⦿ Emphasis was placed on the commercial value of research and the importance of patents in driving innovation and economic growth.

Empowering Through Collaboration and Diversity:

- ⦿ Advocating for fostering curiosity, providing access to resources, mentorship, and encouraging creativity and problem-solving skills.
- ⦿ Acknowledging the transformative force of new age technologies and the growing demand for interdisciplinary knowledge.

In conclusion, the inaugural session has set forth a bold agenda for the future of engineering education and practice. By advocating for curriculum redesign to meet the evolving needs of emerging sectors and emphasizing the shift from makeshift jugaad approach to engineered innovation, we are laying the groundwork for a generation of engineers equipped to address complex global challenges.

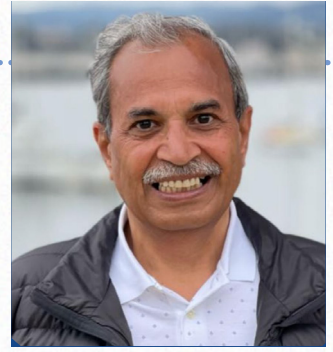
Moreover, the recognition of engineers' pivotal role in shaping not only the quality of governance but also the trajectory of the future workforce underscores the profound impact of our profession. As we embark on this transformative journey, let us remain steadfast in our commitment to excellence, collaboration, and ethical stewardship, knowing that our collective efforts will shape a brighter, more sustainable future for all.

It's imperative that we continue to invest in education, research, and infrastructure to nurture and empower the next generation of engineering leaders.

INDUSTRY PRESENTATION

EMERGING TECHNOLOGY SECTOR SUCCESS STORY

Additive Manufacturing Program Development For Engineering Institutions



Presenter – Mr Saroop Chand, Director, Adroit Information Systems (P) Limited

The presentation emphasized the rising prominence of additive manufacturing as a emerging technology application in India. It underscored the need for educational institutions to adopt and propagate emerging technologies like 3D printing, facilitating collaboration between academia and industry to expose engineering students to this emerging tech.

By investing in professional-grade systems and leveraging advancements in AI and software, institutions can empower the next generation of engineers to create functional solutions across various applications, thereby contributing to India's technological advancement and global competitiveness.

KEY HIGHLIGHTS FROM THE PRESENTATION

Emerging Technology Sector:

Additive manufacturing, also known as 3D printing, is a rapidly adopted technology by the industry sectors such as Aviation, Space, Defence, Electronics, Automotive, Consumer Products, Bio-medical, Renewables, Urban Planning & Construction with significant potential for revolutionizing traditional manufacturing processes. It offers opportunities for job creation and career development for engineers.

Diverse Applications:

3D printing finds applications in electrical switching, educational models, robotic prototypes, drones, customized car making, and town planning, highlighting its diverse utility across industries.

Educational Implications:

To harness the potential of additive manufacturing, educational institutes must invest in professional-grade 3D printing systems capable of producing functional parts. Collaboration with industry and research institutions can facilitate knowledge dissemination and skill development in emerging technologies.

PANEL DISCUSSION

Panelist



Mr Sanjay Prakash,
AVP & Functional Head,
Quality and HSE,
Jindal Water Infra Ltd.



Mr Saroop Chand,
Director,
Adroitec Information
Systems (P) Limited



Mr Puneet Sharma,
Principal HR,
Honeywell UOP India



Mr Ramesha B S,
ALTAIR

Moderated By



Mr Deepankar Bhattacharyya,
General Manager,
Education, Nemetschek India

Emerging And Changing Job Roles & Their Proficiencies At Entry Level - Opportunity, Expectation & Way Forward

With the projected global population set to approach 10 billion by 2050, alongside a substantial rise in the middle-class demographic, the urgency for infrastructure development is undeniable. Yet, meeting these demands hinges on equipping engineering graduates with skill sets tailored to industry needs.

Despite evident demand for core engineering disciplines like mechanical and civil engineering, enrollment rates are dwindling. This discrepancy underscores a critical gap between the skill sets of graduates and industry requirements.

Traditional engineering curricula often lack integration with contemporary technologies vital to sectors such as mechanical design, manufacturing, and architecture engineering. Bridging this divide entails incorporating cutting-edge technologies like generative design, computer engineering, and Building Information Modeling (BIM) into academic programs.

The evolving landscape of job roles within each sector necessitates collaborative efforts between industry and academia to ensure graduates are primed for industry demands.

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The evolving landscape of job roles within each sector necessitates collaborative efforts between industry and academia to ensure graduates are primed for industry demands.

The panel discussion centered on identifying opportunities, managing expectations, and charting a path forward. Collaboration between universities and industries, alongside the integration of emerging technologies into core engineering curricula, emerged as pivotal factors in empowering students with the requisite skills and mindset to excel in evolving job roles within the core engineering sectors.

Key highlights from the panel discussion

Curriculum Enhancement:

- ⦿ Integrate emerging technologies such as generative design, computer engineering, additive manufacturing, and AI into academic curricula.
- ⦿ Incorporate subjects like Building Information Modeling (BIM), quality assurance, and control within engineering disciplines.

Industry-Academia Collaboration:

- ⦿ Foster stronger partnerships between educational institutions and industry players to bridge the gap between theoretical knowledge and practical skills.
- ⦿ Institutes should actively engage with industry partners to understand emerging trends and incorporate them into educational programs.
- ⦿ Establish research collaborations, do joint projects to address industry challenges and promote innovation in engineering education.

Skill Development Initiatives:

- ⦿ Organize workshops, seminars, and training sessions to equip students with the latest industry-relevant skills.
- ⦿ Encourage participation in hackathons, design challenges, and collaborative projects to foster active learning and problem-solving abilities.
- ⦿ Provide access to state-of-the-art facilities and laboratories, allowing students to gain practical experience and apply theoretical knowledge in real-world scenarios.

Faculty Training and Development:

- ⦿ Provide faculty members with training programs and resources to stay updated on emerging technologies and industry trends.
- ⦿ Facilitate industry exposure and internships for faculty members to enhance their understanding of real-world applications.

Student Engagement:

- ⦿ Promote inter-disciplinary learning and encourage students to explore diverse career paths within engineering.
- ⦿ Facilitate interactions with industry experts and organize career guidance sessions to raise awareness about job opportunities in core engineering sectors.

Enhancing Industrial Visibility:

- ⦿ Institutes should focus on enhancing industrial visibility to students by organising industry visits and facilitating internships and industry projects.
- ⦿ This exposure will provide students with first-hand knowledge of industry practices and requirements, motivating them to pursue careers in core engineering sectors.

Research and Publication:

- ⦿ Encourage faculty and students to engage in research activities and publish papers in reputed journals to enhance the visibility and reputation of engineering programs.
- ⦿ Collaborate with industry partners to identify research areas aligned with industry needs and priorities.

Government and Institutional Support:

- ⦿ Advocate for reforms in engineering education to address gaps between academia and industry, focusing on practical skill development, industry exposure, and research orientation.
- ⦿ Engage with government authorities to promote recognition and accreditation of engineering institutes for design review and approvals.

Promotion of Core Engineering Disciplines:

- ⦿ Organize industry talks, seminars, and career counselling sessions to showcase the potential career paths within core engineering sectors.
- ⦿ Encourage students to pursue interdisciplinary learning and explore the intersection of core engineering disciplines with emerging technologies.

Continuous Improvement:

- ⦿ Regularly review and update curricula to reflect evolving industry requirements and technological advancements.
- ⦿ Solicit feedback from industry partners, alumni, and students to identify areas for improvement and innovation in engineering education.

Ecosystem Development:

- ⦿ Foster an ecosystem of innovation and entrepreneurship within engineering institutions to nurture future industry leaders and job creators.
- ⦿ Establish incubation centers and entrepreneurship programs to support student start-ups and ventures leveraging emerging technologies.



EDUCATION THAT INSPIRES - SUSTAINABILITY IN ENGINEERING

Ms. Avni Malhotra, Deputy Director for Programs and Philanthropy at ASME India Private Limited, presented insights into fostering sustainability in engineering education and empowering the next generation of engineers.

The ASME is committed to empowering the next generation of engineers by focusing on three main streams:

Education that Inspires:

Under the "Education that Inspires" stream, ASME organizes competitions, scholarships, and fellowships to engage students and faculty members in various engineering initiatives. Events like EFX and E-Fest provide platforms for students to showcase their skills and innovations.

Ideas that Innovate:

ASME's parallel initiative, Engineers for Change, focuses on supporting innovative solutions in engineering. Through programs like Idea Lab and ISHOW, ASME nurtures innovative ideas from conception to implementation, providing funding and support to deserving projects.

Careers that Matter:

Under the "Careers that Matter" stream, ASME focuses on making engineers relevant to sustainability, considering global challenges like climate change.

As part of this initiative, the foundation organizes the Mechanical Engineering Education Summit (MEED), which aims to make engineering courses more relevant to the evolving needs of society and industry. Introduced in India in 2022, the MEED Summit strives to bridge the gap between industry needs and educational offerings, ensuring that engineering courses align with the demands of tomorrow's world. Additionally, stakeholders such as All India Council For Technical Education (AICTE) are engaged to discuss necessary curriculum updates and industry-relevant research initiatives.

