



Yaantrika Newsletter

Department of Mechanical Engineering

Vision and Mission of the Institute

Vision

- To be one of the premier institutions of Engineering and Management education through excellence in academics, research, innovation and entrepreneurship with global standards.

Mission

- To impart world class value-based education in Engineering and Management.
- To provide thrust for research activities by establishing centers of excellence in sustainable innovative technologies and collaborate with industries to carry out interdisciplinary research.
- To generate highly skilled and competent manpower with leadership qualities, team spirit and concern for society and environment.
- To nurture organizational culture conducive for faculty to be competent and set higher standards.

Vision and Mission of the Department

Vision

- To be a renowned department in Mechanical Engineering through excellence in academics, research, innovation and entrepreneurship.

Mission

- To impart quality education through dynamic curriculum to build professionals/entrepreneurs to meet societal needs.
- To imbibe research & innovative skills through industry collaborations and Centers of Excellence.
- To inculcate team spirit, leadership qualities and promote self-learning to adapt to changing technologies.

Program Educational Objectives (PEOs)

After two/three years of graduation, students will have the ability to:

- Demonstrate a strong foundation in mechanical engineering principles and practices to excel in their professional careers and/or pursue advanced studies in engineering.
- Adapt professional ethics as an individual or in a team for multidisciplinary projects demonstrating creativity and leadership qualities
- Solve the problems of social relevance with concern for the environment through research, innovations and lifelong learning.



This edition of Yaantrika is dedicated to

Shri Tumkur Seetharamaiah Prahlad

Shri Tumkur Seetharamaiah Prahlad is an Indian aerospace scientist and former director of the National Aerospace Laboratories (NAL), Bengaluru. He completed his graduation and postgraduation in Mechanical Engineering from the Indian Institute of Science, Bengaluru (IISc). Later, he attained a doctoral degree (Ph.D) in Aeronautical Engineering. His contributions are reported in Indian Civil Aircraft Development Programmes of Hansa, NAL Saras and Light Combat Aircraft Development Programme. The Government of India has awarded him with **Padma Shri** in 2004. In the same year, he received the H. K. Firodia Award from H. K. Firodia Memorial Foundation.

What's inside.....

- Technical Articles
- Faculty Achievements
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Editor's Desk

Dear Readers,

Welcome to the December 2025 Issue of 'Yaantrika'

The team of Yaantrika, wishes to give our readers an intellectually stimulating newsletter. Our endeavour is to reflect the values and quality of our esteemed institution.

The present edition of the Newsletter focuses on the activities and achievements of the Department over the past six months along with some interesting articles from our students. We appreciate all those students who have contributed their articles for this issue. It is their attribute of willingness, to put in efforts, share knowledge, concerns and special insights that have made this issue possible. Knowledge is a treasure that appreciates when we share and depreciates when stagnant. So, never stop sharing knowledge and helping others.

Wishing the readers, a happy perusal of the newsletter "Yaantrika".

Editorial Team

'The Department of Mechanical Engineering has been accredited by the National Board of Accreditation (NBA) for the Academic Years 2018 - 19 to 2021 - 22 and valid upto 30.06.2025'

(The department has applied for renewal of accreditation and is currently awaiting the visit of the expert team.)

ABOUT MECHANICAL ENGINEERING DEPARTMENT

The Department of Mechanical Engineering was started in the year 2011 with an intake of sixty students. All the laboratories have been established with state-of-the-art equipment. The Department has a team of dedicated and well qualified faculty members, with a blend of rich industrial and academic experience. The faculty members with Master's and Doctorate degree, having specialization in Machine Design, Thermal and Manufacturing Engineering are an asset to the institution and to the students. The Department has an R&D Centre recognized by Visvesvaraya Technological University, Belagavi.

The Department has Toyota Centre of Excellence and 3D Printing Center of Excellence. Toyota COE is a state-of-the-art Centre of Excellence established in association with Toyota Kirloskar Motor, with the distinction of being the first in the country to have such a Centre of Excellence by Toyota company. It has cut sections of Innova and Fortuner Car Engine Systems, wherein the running of the engine can be actually seen. The Center of Excellence also has facilities for students to experience hands-on assembly and dismantling of all the engine parts. 3D Printing COE has been established to provide students with hands-on experience and training in the rapidly evolving field of additive manufacturing. Equipped with advanced 3D printers and scanners, the Centre enables students to explore the diverse applications of 3D printing technology and develop innovative solutions across various industries.

The Department has MoU's with Toyota Kirloskar Motors Pvt. Ltd., Mahatma Gandhi Institute for Renewable Energy and Development (MIREED), Fenfe Metallurgicals, Spectrum Tool Engineers Pvt. Ltd., Maltown Electric Pvt. Ltd. Kareer Banana Consultants LLP & Cubistry Teck Solutions for sustained activities in the area of automobile engineering, renewable energy, metallurgical engineering, manufacturing and electrical engineering and career guidance respectively. The Department has initiated a dedicated Industry-Institute-Interaction Cell (IIIC) to encourage budding entrepreneurs with expert guidance and to provide internship opportunities for students.

The Department also offers Lathe Operator' course (Automotive Sector) under Pradhan Mantri Kaushal Vikas Yojana (PMKVY) an initiative by Automotive Skill Development Council, Ministry of Skill Development and Entrepreneurship, Government of India.

TECHNICAL ARTICLES

Mechanical Design in Medical Devices

Introduction: Medical devices represent one of the most demanding applications of mechanical engineering, where design precision can literally mean the difference between life and death. From prosthetic limbs that restore mobility to cochlear implants that restore hearing, and from artificial heart valves that keep blood flowing to surgical robots that enable previously impossible procedures, mechanical engineers work at the intersection of biology, materials science, and precision engineering to create devices that seamlessly integrate with the human body.

The Biocompatibility Challenge: The fundamental challenge in medical device design is biocompatibility—ensuring materials and devices can coexist with living tissue without triggering adverse reactions. When a medical device enters the body, it immediately encounters proteins that adhere to its surface, potentially triggering foreign body reactions and inflammation. Over time, these materials must integrate with adjacent tissues, sometimes degrading in controlled ways while facilitating tissue regeneration. Medical-grade materials fall into seven distinct classes, each with unique properties and applications. Metallic compounds like titanium alloys and stainless steel serve as the backbone of implants and surgical devices, particularly in cardiovascular and orthopedic applications. Their corrosion resistance is crucial—austenitic stainless steels and titanium alloys are preferred specifically because they resist degradation when in contact with body tissues and fluids.

Prosthetics: Modern prosthetic design has evolved dramatically beyond simple mechanical replacements. Advanced prosthetic limbs now incorporate lightweight carbon fiber composites that provide exceptional strength without excessive weight, enabling more natural movement patterns. The material's high tensile strength and flexibility allow for dynamic range of motion that closely mimics biological limbs.



Osseointegrated Prosthetic Limb (OPL)

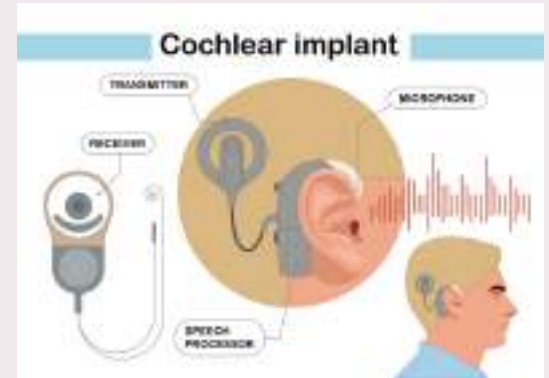
Osseointegration represents a revolutionary advancement where intramedullary components connect directly to percutaneous fixtures, eliminating traditional socket-based systems. Devices like the OPRA (Osseoanchored Prostheses for the Rehabilitation of Amputees), Compress Transcutaneous Implant (CTI), and Osseointegrated Prosthetic Limb (OPL) directly integrate titanium implants into bone, providing superior stability and eliminating complications associated with compromised soft tissue envelopes.

Artificial Heart Valves: Engineering Blood Flow: Heart valves present unique mechanical challenges, requiring designs that withstand approximately 40 million opening-closing cycles annually while maintaining precise hemodynamic performance. The human heart contains four valves—tricuspid, pulmonary, mitral, and aortic—each serving as one-way gates ensuring proper blood flow direction. Artificial heart valves fall into three categories: mechanical valves, bioprosthetic tissue valves, and engineered tissue valves. Mechanical valves, particularly modern bileaflet designs, provide relatively superior hemodynamics with very low resistance. However, they generate high shearing forces on blood cells and platelets, necessitating lifelong anticoagulation therapy to prevent thrombosis. Pyrolytic carbon has become the material of choice, with wear resistance 30 times greater when articulating against itself compared to metals.

Advanced computational fluid dynamics now enables virtual valve design and testing, simulating complete flow fields at multiple scales simultaneously. Researchers are developing multiscale approaches coupling large-scale fluid-structure solvers with highly resolved small-scale models that can assess fluid forces on individual blood cells.

Cochlear Implants: Cochlear implants bypass damaged inner ear structures to directly stimulate the auditory nerve, restoring hearing for individuals with severe sensorineural hearing loss. Unlike hearing aids that merely amplify sound, cochlear implants convert acoustic signals into electrical impulses that

The system comprises external and internal components working in concert. External processors worn behind the ear contain microphones, digital signal processors, and transmitter coils that capture environmental sounds, filter for audible speech, and transmit processed signals across the skin via radio frequency. Internal receivers surgically implanted beneath skin convert these signals into electrical impulses delivered through electrode arrays embedded in the cochlea's spiral structure.



Cochlear implanting methodology

Surgical Robotics-Precision Through Mechanical Design: Robotic-assisted surgical devices (RASDs) leverage precision mechanical engineering to perform complex medical procedures with enhanced accuracy, flexibility, and control. These systems have potential to reduce operation time, minimize anesthesia use, decrease complication risk, and accelerate patient recovery. The mechanical components of surgical robots require extraordinary precision. Miniature joints, gears, actuators, bearings, linkages, and cable systems enable robotic arms and instruments to execute complex motions with sub-millimeter accuracy. Electric actuators have become preferred over hydraulic and pneumatic alternatives due to their superior accuracy and compact size. Compact, low-backlash gearboxes ensure precise speed and torque control crucial for delicate surgical tasks.

The Path Forward: Medical device engineering stands at an exciting frontier where advances in materials science, computational modeling, miniaturization, and integration converge. Smart prosthetics incorporating advanced sensors and AI promise unprecedented functionality. Tissue-engineered organs could eliminate transplant waiting lists. Totally implantable neural prostheses may soon restore complete sensory function.

Yet challenges persist: reducing costs to improve accessibility, achieving perfect biocompatibility across diverse patient populations, extending device longevity, and minimizing complications. Regulatory frameworks must evolve alongside technology, ensuring safety without stifling innovation. Interdisciplinary collaboration between orthopedics, materials science, biology, and mechanical engineering remains essential for realizing next-generation medical devices.

As mechanical engineers, we bear responsibility for designs that intimately integrate with human physiology. Every calculation, every material selection, every geometric optimization potentially impacts someone's quality of life. This profound responsibility drives us to pursue perfection in biocompatibility, functionality, durability, and accessibility. The field demands not just technical excellence but empathy—understanding that behind every device specification stands a human being hoping to walk, hear, or simply survive another day. This is engineering at its most meaningful: applying mechanical principles to restore human capability and dignity.

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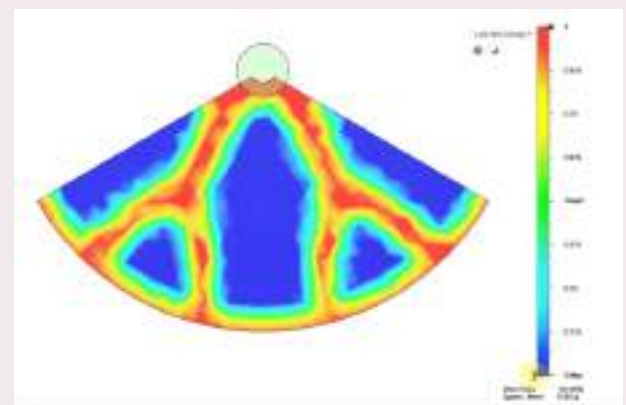
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Tejas Bhushan K B

VII Semester

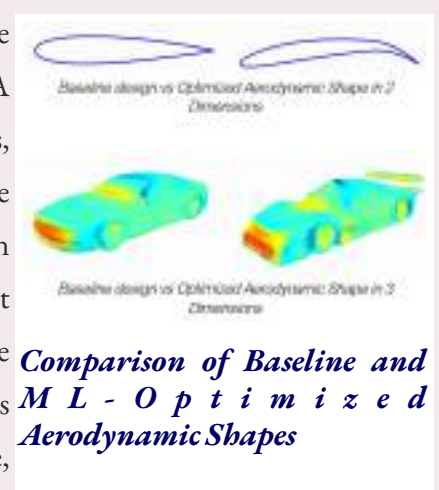
Machine Learning in Design Optimization: Beyond Traditional FEA

The landscape of design optimization is undergoing a revolutionary shift, moving beyond the iterative and often time-consuming cycles of traditional Finite Element Analysis (FEA). Machine Learning (ML) is emerging as a powerful new paradigm, promising to accelerate innovation, reduce development costs, and unlock previously unattainable design efficiencies. Historically, engineers have relied on FEA to simulate product performance and inform design choices. While invaluable, this process often involves extensive computational resources and multiple design iterations to converge on an optimal solution. ML, however, offers a disruptive alternative. By training algorithms on vast datasets of design parameters and corresponding performance outcomes, ML models can learn complex relationships and predict optimal configurations with remarkable speed and accuracy.



ML-Driven Topology Optimization Beyond Traditional FEA

One of the most significant advantages of ML in this context is its ability to explore vast design spaces far more comprehensively than human engineers or traditional FEA alone. This allows for the discovery of counter-intuitive yet highly effective designs, often leading to breakthroughs in material usage, weight reduction, and performance enhancement. Furthermore, ML can effectively handle multi-objective optimization problems, balancing competing requirements like strength, weight, and cost simultaneously. Imagine a scenario where a new aerospace component needs to be designed for maximum strength and minimum weight. Instead of running countless FEA simulations, an ML model, trained on previous designs and their performance, could rapidly suggest optimal geometries and material distributions, drastically cutting down development time.



Comparison of Baseline and ML - Optimized Aerodynamic Shapes

The integration of ML into design optimization workflows represents a leap forward, transforming how products are conceived and refined. As ML algorithms continue to evolve and computational power increases, we can expect even more sophisticated and autonomous design processes, pushing the boundaries of what's possible in engineering.

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Dimpana Jhadav

V Semester

Mechanical Metamaterials: Engineering Properties Through Geometry

Introduction: In conventional mechanical engineering, a component's performance has long been determined by its material. Strong alloys are selected for durability and load-bearing applications, while lighter metals or composites are preferred when weight reduction is important. Recent developments have revealed that internal geometry can influence mechanical behavior as much as, or even more than, the material itself. This insight has led to the development of mechanical metamaterials, engineered structures whose mechanical properties arise primarily from their design

Understanding Mechanical Metamaterials:

Mechanical metamaterials are defined by repeating internal structures, called unit cells, which control how the material reacts to forces such as tension, compression, or bending. One of the most striking examples is auxetic materials, which expand laterally when stretched (behavior opposite to most

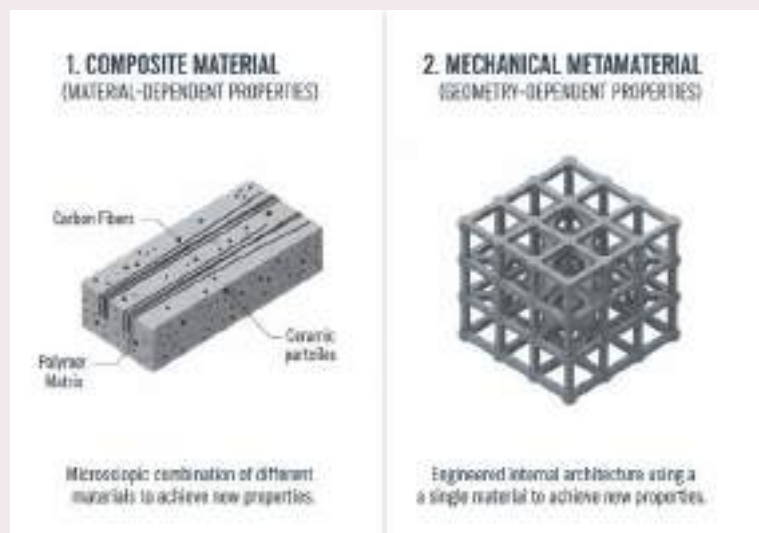
Mechanical metamaterials and composites may seem similar, but their performance is governed by different principles. Composites improve mechanical properties by combining materials—for example, carbon fibers embedded in a polymer matrix increase strength and

Design Principles of Mechanical Metamaterials:

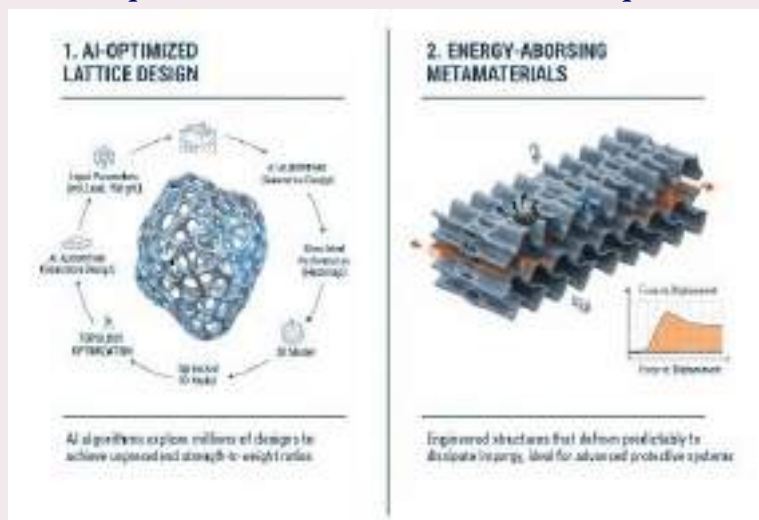
The design process for mechanical metamaterials involves balancing geometry, mechanical performance, and manufacturability. Engineers consider: (i) Unit cell configuration: Choosing repeating patterns that

determine mechanical response. (ii) Topology optimization: Reducing material without sacrificing strength. Directional properties: Ensuring behavior varies along different axes as needed. (iii) Scalability: Making sure small-scale designs

Future Scope: Advances in computational design, artificial intelligence, and additive manufacturing are making mechanical metamaterials increasingly practical. When combined with topology optimization, engineers can achieve high-performance, lightweight structures more efficiently.



Composite vs Metamaterial Structure Comparison



AI Optimized Structures and Smart Materials

For future mechanical engineers, designing metamaterials means going beyond material selection to crafting internal structures that achieve desired properties. These materials can offer: (i) Negative Poisson's ratios (ii) High energy absorption (iii) Tunable stiffness along different directions. Although challenges remain, such as large-scale manufacturing and long-term durability, mechanical metamaterials are poised to transform aerospace, biomedical, automotive, and structural engineering.

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- Coulaï et al., Combinatorial Design of Mechanical Metamaterials
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- Mirzaali et al., Multi - material 3D Printed Mechanical Metamaterials

Tejaswini M

III Semester

FACULTY ACHIEVEMENTS

- **Dr. Raghavendra N.**, completed an online course “Certified Data Science Associate Program”, conducted by Indian Council for Technical Research and Development India, on 8th July 2025.
- **Mrs. Madhushree K. J.**, participated in online faculty development program on “Recent Advancements in Civil Engineering”, organized by Rajshree Institute of Management and Technology, Bareilly(U.P), from 4th to 8th August 2025.
- **Mrs. Shwethashree B.**, participated in an online faculty development program on “Sustainable Engineering and Carbon Neutrality” organized by TKM College Of Engineering from 25th to 30th August 2025.
- **Mr. Vishwanath B. R.**, participated in a workshop titled “Next Engineers Partners”, held at Portugal, from 16th to 20th September 2025.
- **Dr. K. C. Ananthapadmanabham**, participated in an online faculty development program on “Sustainable Materials and Advanced Manufacturing Practices” organised by Department of Automobile Engineering, VNR VJIET from 22nd September to 26th September 2025.
- **Dr. D. Shivalingappa**, completed an NPTEL course titled “Artificial Intelligence and Machine Learning in Materials Engineering” in October 2025.
- **Mr. S. Sudhindra**, participated in online faculty development program on “Smart Magnetic Materials: Enabling Technologies for Intelligent Devices”, organized by Thiagarajar College of Engineering, Madurai, from 9th to 14th October 2025.
- **Dr. Raghvendra N., Dr. B S Anil Kumar, Mr. Bapugowda C. M., Vishwanath B. R.**, published a book titled “Machine Drawing and GD & T”, Taneesha Publishers, on 30th October 2025.
- **Mr. Bapugowda C. M.**, presented a paper titled “Investigation of Lamb Waves Based Structural Health Monitoring of Composite Plates”, in International Conference on Applied Sciences and Advanced Materials, organized by department of Physics, Chemistry, Mathematics and Mechanical Engineering on 28th and 29th November -2025.
- **Mr. Balakrishna S. S.**, presented a paper titled “Effect of Wood Filler On Compressive Strength and Damping Properties of Granite-Epoxy Composites”, in International Conference on Applied Sciences and Advanced Materials, organized by department of Physics, Chemistry, Mathematics and Mechanical Engineering on 28th and 29th November -2025.

- **Dr. P. L. Srinivasa Murthy**, presented a paper titled “A comprehensive Review of Wire Arc Additive Manufacturing(WAAM): Current Advances and Future Directions”, in International Conference on Applied Sciences and Advanced Materials, organized by department of Physics, Chemistry, Mathematics and Mechanical Engineering on 28th and 29th November -2025.
- **Dr. K C Ananthapadmanabham**, presented a paper titled “Design and Development of Levitating Vertical Axis Wind Mill”, in International Conference on Applied Sciences and Advanced Materials, organized by department of Physics, Chemistry, Mathematics and Mechanical Engineering on 28th and 29th November -2025.
- **Dr. D. Shivalingappa**, co-authored a research paper titled, “Optimizing Tribological Characteristics in Magnesium–Aluminum–Silicon Alloys through the Application of the Taguchi Method and Artificial Neural Network”, Journal of Materials Engineering and Performance, November 2025.
- **Dr. D. Shivalingappa**, presented a paper titled “Dry Sliding Wear Behaviour of Cast In-Situ Magnesium Alloy Composite”, in International Conference on Applied Sciences and Advanced Materials, organized by department of Physics, Chemistry, Mathematics and Mechanical Engineering on 28th and 29th November -2025.
- **Dr. Raghavendra N.**, successfully completed role of reviewer in Springer Nature, in December 2025.
- **Dr. Raghavendra N.**, received the certificate of contribution to the editorial board from Deep Science publishing on 16th December 2025.
- **Mrs. Madhushree K J.**, participated in online faculty development program on “Sustainability Driven NDT Approaches for Resilient and Sustainable Infrastructure”, organized by Coimbatore Institute Of Engineering and Technology, from 22nd to 27th December 2025.

STUDENT ACHIEVEMENTS

- **Toasif Pasha and Hamsini H. S.**, students of 5th semester, secured third place in the Cad- A- Thon, International level Annual Technical Symposium, organized at B M S College of Engineering, on 19th and 20th September 2025.
- **Aadya Das**, student of 7th semester, completed an online NPTEL course titled, “Welding Application Technology”, in September 2025.
- **Shreyas Venkatesh**, student of 3rd semester, secured third place in (100m and 200m)VTU inter collegiate swimming state level tournament, held at MSRIT, Bangalore, from 24th to 25th September 2025.
- **Toasif Pasha, Samana R., Hamsini H. S. and Kushal R.**, students of 5th semester, won second prize in national seminar, on the theme “Deep Tech and Engineering Excellence: Driving India's Techade”, held on 15th September 2025, at IEI(India), Karnataka State Centre, Bengaluru
- **Dimpana P Jadhav**, student of 5th semester, won first prize in national seminar, on the theme “Deep Tech and Engineering Excellence: Driving India's Techade”, held on 15th September 2025, at IEI(India), Karnataka State Centre, Bengaluru.
- **Hamsini H. S.**, won first prize in Debate, on the theme “ Deep Tech and Engineering Excellence: Driving India's Techade”, held on 15th September 2025, at IEI(India), Karnataka State Centre, Bengaluru
- **Tejaswini , Kamakoti Devisri Sowndarya and Preethi S**, students of 3rd semester, participated in national seminar, on the theme “ Deep Tech and Engineering Excellence: Driving India's Techade”, held on 15th September 2025, at IEI(India), Karnataka State Centre, Bengaluru
- **Aadya Das**, student of 7th semester, received best student of the chapter award from Indian Society for Technical Education Karnataka section, on 12th November 2025.



Aadya Das, receiving best student award at ISTE, Karnataka section, November 2025.



Shreyas Venkatesh, secured third place in (100m and 200m)VTU inter collegiate swimming state level tournament, held at MSRIT, Bangalore , September 2025.

DEPARTMENTAL ACTIVITIES

FDP on Emerging Trends in 3D Printing and Industry 5.0

The Faculty development program was held from 7th to 11th July 2025. It aimed to bridge the gap between additive and the traditional practices in manufacturing and production technologies and their transformative applications in manufacturing. Esteemed experts from reputed organizations, Mr. Kashinath M Patnasetty, Head- Value Added Services & Application Support Group, Ace Designers Limited, Mr. Umesh L S, Director, AMS Bhargava machining Pvt. Ltd, Mr. Shreyas S P, Co-Founder, Hycube Works Pvt.Ltd, Dr. T Ram Prabhu, Scientist E and Joint Director, DRDO, Govt. of India, Dr. Deepa Srinivasan, Dean, Research & Innovation Center, Ramaiah University of Applied Sciences, Bangalore, Mr. Ganesh V, Project Manager, Society for Innovation and Development, IISc, Bengaluru and Mr. Rama Prakash Holla, Managing Director, Distinct Productivity Solutions Pvt.Ltd, delivered the sessions during the programme. The emerging topics were covered like laser driven additive techniques, optimization techniques in 3D printing, Smart factories, and sustainable manufacturing solutions and Industry 5.0. The program helped educators and researchers to explore cutting edge advancements, fostering collaboration and innovation. Industrial visit on all days was the key highlights of this FDP.

Seminar on Higher Education

On July 10th , 2025, the Mechanical Engineering Department of BNM Institute of Technology had the privilege of hosting an insightful talk on “Masterclass on Higher Education (Abroad Studies)” by Sri Tiru Mothukuri, a renowned expert in higher education counseling. The event aimed to provide mechanical engineering students with comprehensive information on pursuing higher studies in foreign countries, the pathways available, and the benefits of scholarships provided by international universities.



Sri Tiru Mothukuri along with Faculty members and students of 7th semester



"Strive for perfection.... When it does not exist, designit."

- Sir Henry Royce (Co-founder of Rolls-Royce)

Internship -1

The Department of Mechanical Engineering, in association with IEI and Institution Innovation Council (IIC), organized a Three-week internship program on “Modelling and Design of CAD Components and SAP in Data Processing” for the third semester Mechanical Engineering students from 21st July to 9th August 2025. The internship aimed to provide hands-on training in Computer-Aided Design (CAD) and introduce students to Enterprise Resource Planning (ERP) concepts using SAP software. This program bridged the gap between academic learning and industrial practices, enhancing students' design and data management skills. Resource persons were Dr. B. S. Anil Kumar, Vishwanath B. R., Vishnu P., and Shwethashree B.



Mr. Vishwanath B. R., addressing 3rd semester students during internship session



Poster presentation by 3rd semester students after Internship-1



Poster presentation by 3rd semester students after Internship-1



“Failure is the opportunity to begin again more intelligently...”

- Henry Ford

Seminar on Unlocking Enterprise Potential: An Introduction to SAP Material Management (MM)

The Department of Mechanical Engineering, in association with the Indian Society for Technical Education (ISTE), organized a one-day seminar on “Unlocking Enterprise Potential: An Introduction to SAP Material Management (MM)” on 21st July 2025. The seminar aimed to provide third-semester Mechanical Engineering students with knowledge of Enterprise Resource Planning (ERP) systems and the importance of SAP MM



Mr. Yatish with students of third semester during the technical session

in modern industrial practices. SAP Material Management (MM) is a core functional module in SAP ERP software that deals with procurement handling and inventory management. The session was designed to expose students to real-world applications, industry practices, and the integration of material management into manufacturing and supply chain processes.

Technical Talk on Fundamentals of IoT

The Department of Mechanical Engineering organized a technical session on “Fundamentals of IoT” for the benefit of 5th semester students on 28th August 2025 at 8.30 am. The talk was delivered by Dr. Venkatesha K, Professor and Head, Department of Electrical and Electronics Engineering, BNMIT. The primary objective of this session was to introduce students to the core principles of the Internet of Things (IoT) and highlight its interdisciplinary relevance, particularly in the field of Mechanical Engineering. The talk successfully bridged the gap between electronics and mechanical domains, showcasing the interdisciplinary nature of modern engineering. The insights shared by speaker created curiosity, inspired innovation, and encouraged students to acquire knowledge in emerging technologies like IoT.



Dr. Venkatesha K, Professor and Head, Department of EEE, addressing 5th semester students during the technical session

Seminar on Application of AI in Smart Product Design

The Department of Mechanical Engineering, BNMIT, organized a technical talk on “Application of AI in Smart Product Design” on 28th August 2025 from 10:30 AM for 5th semester students. The session was conducted by Mr. Rajesh Kumar, Product Manager, CADD Centre, who has extensive expertise in product innovation and design technologies. The main objective of the talk was to expose students to modern applications of Artificial Intelligence (AI), Augmented Reality (AR), and Virtual Reality (VR) in smart product design, enabling them to align their academic knowledge with industry needs.



Mr. Rajesh Kumar, addressing 5th semester students during the session

Technical talk on Importance of Quality in Industry

The Department of Mechanical Engineering, BNMIT, in association with the Institution of Engineers (IEI) – Students Chapter (ME), organized a technical talk on the theme “Importance of Quality in Industry” on 13th September 2025. The session was delivered by Mr. Mohamed Javeed, Retired Director, DGAQA, India, who shared his vast industrial experience and insights on quality practices that drive excellence in organizations. During the talk, Mr. Javeed emphasized that quality is the cornerstone of customer satisfaction and sustainable success. He highlighted how meeting customer requirements and exceeding expectations can be achieved only when industries place quality as their foremost priority.

Seminar on Roadmap to Embedded System: Microcontrollers, Sensors, and Industrial Applications

The Department of Mechanical Engineering, B.N.M. Institute of Technology, in association with the ISTE Student Chapter, organized a seminar on “Roadmap to Embedded Systems: Microcontrollers, Sensors, and Industrial Applications” on 8th October 2025 for 5th semester students. The seminar was delivered by Mr. Nisarg Nirmal Kumar, Techno-



Mr. Nisarg addressing 5th semester students during the seminar

Commercial Entrepreneur from Skillicon Technology. His session was truly insightful and thought-provoking. He explained the fundamentals of IoT systems, the working of embedded systems in industrial environments, and highlighted their significance in automotive technologies. The talk effectively bridged the gap between traditional mechanical systems and future-oriented embedded technologies.

Workshop on Blockchain Use Cases on Internet

The Department of Mechanical Engineering, in association with the Indian Society for Technical Education (ISTE) Students Chapter – BNMIT, organized a workshop on “Blockchain Use Cases on Internet” on 13th October 2025 for the fifth-semester Mechanical Engineering students. The resource person for the workshop was Dr. S. Geetha, Professor, Department of Computer Science and Engineering, BNMIT. Dr. Geetha delivered an insightful session on the fundamental principles of blockchain technology, its applications across various domains, and its transformative potential in ensuring transparency, security, and decentralization on the internet. She also discussed real-world use cases demonstrating how blockchain is revolutionizing industries such as finance, supply chain management, and digital identity. The workshop helped students gain a clear understanding of how blockchain concepts can be integrated into engineering systems and industrial applications. It also encouraged interdisciplinary learning by exposing mechanical engineering students to modern digital technologies relevant to Industry 4.0.

Inauguration of QCFI Student Chapter

The inauguration of the Quality Circle Forum of India (QCFI) Student Chapter was held at BNM Institute of Technology (BNMIT) on 16th October 2025. The event marked a significant milestone in fostering a culture of quality, innovation, and continuous improvement among students. The Quality Circle Forum of India is a non-profit organization dedicated to promoting quality concepts and continuous improvement across industries and educational institutions. The QCFI Student Chapter serves as a bridge between academia and industry, empowering students to develop leadership, communication, and problem-solving skills through activities such as success story presentations, conventions, and workshops on methodologies like 5S, Kaizen, and Lean.



Dignitaries, Faculty members, students of ME and MBA dept., during the inauguration session

Industrial Visit

An industrial visit was organized by the Department of Mechanical Engineering, BNMIT, for third-semester students on 16th October 2025, to M+Acer Automotive Systems Pvt. Ltd., a part of the Macurex Group of Companies. The primary objective of this visit was to bridge the gap between academic learning and industrial practices by providing students with real-time exposure to modern manufacturing processes and technologies used in the automotive sector. Through this visit, students gained valuable insights into: The application of mechanical engineering principles in real-world manufacturing, the integration of electrical and mechanical systems in automotive components, the importance of automation and quality assurance in industrial production and the operational workflow of an Export Oriented Unit.



Students of 3rd semester and Mr Bapugowda with M+ Acer employee during industrial visit

Talk on Engineering Vibrations: From Fundamentals to Real-World Systems

An expert talk on “Engineering Vibrations: From Fundamentals to Real-World Systems” was organized by the Department of Mechanical Engineering, B.N.M. Institute of Technology (BNMIT), under the banner of the Institution of Engineers (India) – Students Chapter (ME) on 24th October 2025 to 7th semester students. The resource person for the event was Dr. Sridhar N. Shastry, Assistant Professor, Department of Mechanical Engineering, RNS Institute of Technology, Bengaluru. Dr. Sridhar shared his expertise on vibration fundamentals, measurement techniques, and their significance



7th semester students and faculty members with Dr. Sridhar during the technical talk

in analyzing and designing real-world mechanical systems. His talk emphasized on how vibration analysis plays a crucial role in condition monitoring, product design, and failure prevention in modern industries.

International Conference on “Applied Sciences and Advanced Materials” from 28th-29th November 2025

The International Conference on “Applied Sciences and Advanced Materials” (ICASAM-2025) was jointly organized by the Departments of Physics, Chemistry, Mathematics and Mechanical Engineering on 28th and 29th November 2025, in hybrid mode. Conference featured a comprehensive technical program which included keynote address by renowned persons from advanced materials and engineering fields and paper presentations by research scholars and students from India. The two-day conference comprised 09 Invited Lectures and 17 Technical Sessions, some of which were held concurrently. Paper presentations were organized under five tracks - Physics, Chemistry, Mathematics, Mechanical Engineering, and allied Engineering



Dignitaries and conference delegates during the inauguration of the International Conference

Branches. During the conference, 170 research papers were presented, including 40 online presentations by scholars and students from prestigious institutions, including IISc Bengaluru, Karunya University, Coimbatore, KKIT Coimbatore, Jamia Millia Islamia, Central University, New Delhi, Vijayanagar Sri Krishnadevaraya University, VTU, Bangalore University, Presidency University, Government Engineering College Chamarajanagar, and several others. All abstracts were compiled into a Book of Abstracts, and selected papers will be published in the Cureus Journal of Engineering, a Springer Nature publication.

Alumni Talk Series

The alumni talk was conducted on 25th October, 2025, for the fifth semester students of Mechanical Engineering. It focused on the sustainable practices of Additive manufacturing. Ganesh V, a proud alumnus of Mechanical Engineering department (2015-19 batch) currently Project Manager Society for Innovation and Development, IISc Bengaluru, addressed our young minds and enlightened them with his inspirational talk. During the talk, he conveyed the importance of sustainability in the fields of science and technology. He described about the current job prospects in additive manufacturing sectors.



Ganesh V
*Project Manager,
Society for Innovation & Development, IISc*



Pranav S V
*Founder
Creedom Robotics*

The alumni talk was conducted on 22nd November, 2025, for the third semester students of Mechanical Engineering. It focused on the sustainable practices of Additive manufacturing. Pranav S V, a proud alumnus of Mechanical Engineering department (2018-22 batch) currently Founder Creedom Robotics, addressed our young minds and enlightened them with his informative talk. During the talk, he conveyed the importance of Application of CAD in Drones and Robotics. He also discussed and explained about the current job opportunities in robotics and Drone technology.

Workshop on Machine Drawing

The Machine Drawing Workshop was conducted on December 2nd 2025, to strengthen the practical understanding of machine drawing, orthographic projection, conventional representation of machine elements, and basic CAD-oriented drawing practices among III Semester Mechanical Engineering students. Resource person was Mr. Shankar. The workshop provided an interactive platform where students observed demonstrations, participated in guided activities, and connected classroom concepts with drawing-room and workshop practices. The workshop also promoted collaborative learning, observation, and interactive participation. Overall, the activity contributed meaningfully to the attainment of course outcomes and strengthened students' readiness for subsequent machine-drawing and design-oriented courses.



*Hands-on guidance provided by Mr. Shankar to
3rd semester students during the workshop.*

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