MECHRONICLE

APRIL, 2026

Message from the HOD

I am delighted to publish the 5th edition of the biannual newsletter of the Department of Mechanical Engineering IIEST, Shibpur, after taking the reins of this Department on 3rd January 2026. As is well known, this Department is one of the oldest in the country, celebrating about 105 years of its glorious existence since 1921. This newsletter highlights the achievements and aspirations of the faculty members, research scholars, and students of this Department. Over the last six months, the faculty members have excelled in various fields, bringing laurels to this Department. The faculty members hosted three Faculty Development Programs and one Executive Development Program in various emerging fields of Mechanical Engineering and interdisciplinary areas during this period. One more Faculty Development Program will be organized very shortly in an online mode. The faculty members of this Department are publishing their research papers in the top-ranking journals, and the number of such publications is increasing day by day. Some of the faculty members are also acting as National Reviewers and Members of the Editorial Boards of the various reputed journals. During this period, the faculty members have received several sponsored and consultancy projects to the tune of a few crores from the various funding agencies, and more are in process. Several patents were also published during this period. These efforts not only enhance the Department's academic stature but also contribute meaningfully to advancing research and developing society as a whole.

The students of this Department have consistently excelled in both academic and co-curricular activities. Their active participation in challenging technical competitions, securing internships through competitive processes in various leading Research and Development organizations, industrial visits, and excellent placement statistics reflect the Department's commitment and holistic approach towards technical education and nation-building. These achievements are a source of immense pride in our ongoing efforts to bridge theoretical knowledge with practical application and move closer towards "*Atmanirbhar Bharat*".

I take this opportunity to express my sincere gratitude to all my faculty and staff colleagues, students, research scholars, and alumni for their continued support and patronage to the Department's growth. This issue of the newsletter will capture the spirit of our collective journey and continue to inspire excellence in all our academic endeavours.

JAY HIND

Dr. Aritra Ganguly
Associate Professor and Head,
Department of Mechanical Engineering

Editorial

Sports News

Dr. Apurba Das led the IIEST cricket team in the inter-NIT Cricket tournament held at NIT Bhopal from 13th to 15th December, 2025. **Dr. Kaustav Pradhan** (Wicket keeper batsman all-rounder), **Dr. Rajesh Akula** (a genuine all-rounder), **Dr. Mohammad Shahid Raza** (all-rounder), **Dr. Mukesh Kumar** and **Dr. Kush Kumar Dewangan** (Team Manager) were the other members of the IIEST cricket team from this department.

Professor Bijan Kumar Mandal represented IIEST Shibpur as player cum coach in the **Inter-NIT**

Badminton Tournament held at NIT Jalandhar from 25th to 27th December, 2025.

At NIT Jalandhar badminton court

At IIEST Shibpur badminton court

The Department of Mechanical Engineering and the Department of Aerospace Engineering and Applied Mechanics (combined team name being **Turbulence**) emerged as the **Runners-Up** in the Inter-Departmental Cricket Tournament under the leadership of **Professor Bijan Kumar Mandal**.

The tournament, named as **Talent Search Competition for Faculty, Officers, and Staff Members**, was organized by the Institute from **5th to 13th February 2026** to identify players for the Inter-NIT Cricket Tournament for faculty and staff.

Team Turbulence delivered an outstanding performance, winning all their league matches and the semi-final before narrowly losing in the final. They began their campaign with a dominant **10-wicket victory** over the Computer Science and IT Department, where openers **Bijan Kumar Mandal** and **Parikshit Kundu** (Aero & AM) successfully chased down the target.

In the subsequent matches, **Rajesh Akula** delivered exceptional performances, including a magnificent century, and made significant contributions with both bat and ball throughout the tournament, earning the **Man of the Tournament** award. **Kaustav Pradhan** played an excellent innings of 49 runs in the final, while **Shahid Raja** consistently contributed as an all-rounder. **Apurba Das** bowled impressive spells in the matches he played.

The team also benefited from excellent fielding efforts by **Ashim Guha** (one of the best in the team**), Biswajit Sarkar, Biprajit Dey, Sourav Kundu, Santanu Das, Snehasish Bhattacharjee, Bidyut Pal** (Mechanical) and **Pratim Kumar, Pabitra Halder, Jayanta Kundu, Nageshwara Rao (Aero & AM).** Due to limited number of over (10, 12, and 15), many players had fewer batting opportunities. However, **Apurba Das** and **Sourav Kundu** added valuable runs in the final overs of key matches.

Reaching the final of the cricket tournament

During the prize distribution ceremony

Santanu Sardar and **Sudip Ghosh** fulfilled their roles as Team Manager and unofficial photographer respectively, with great dedication. The consistent support and encouragement from our former colleagues **Dr. Aloke Kumar Das** and **Dr. Santanu Kumar Karmakar** throughout the tournament also deserve special appreciation

In addition to cricket, **badminton and table tennis tournaments** were also conducted during the same period. **Akula Rajesh**, along with **Nageshwara Rao (AE&AM)**, won the **Badminton Doubles Title**. **Bijan Kumar Mandal** and **Kaustav Pradhan** won their first-round singles matches but had to withdraw due to scheduling conflicts with cricket. **Dr. Uttam Rana** also played in the badminton tournament and reached the quarter final. In table tennis, staff members **Bijit Kumar Dey** and **Ashis Kumar Paul** clinched the **Doubles Title**, while **Dilip Kumar Das** and **Jayanta**

Kumar Kundu (AE&AM) finished as **Runners-Up**. **Dilip Kumar Das** also secured the runner-up position in the Table Tennis singles event.

After the TT doubles final at IIEST Shibpur

Overall, the inter-departmental tournaments organized by IIEST Shibpur for faculty members, officers and staff members showcased remarkable talent, teamwork and sportsmanship across all participating departments.

Prof. Bijan Kumar Mandal
Professor,
Department of Mechanical Engineering

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Departmental Activities

The department is preparing for NBA accreditation. Recently, the department's vision statement and mission statements were revised, as well as, programme educational outcomes, programme specific outcomes, course objectives and course outcomes were established and mapped. A dedicated department level NBA committee was proposed previously, which is supervising the activities.

Dr. Bidyut Pal is setting-up his 'Biomechanics Laboratory' on the 3rd Floor with the financial aids from the PAIR Project with IISc Bangalore, while the infrastructural and manpower support from the institute.

Dr. Rajib Chakraborty has proposed to set-up a 'Metal Additive Manufacturing Laboratory' with the financial aids from the PAIR Project with IISc Bangalore, while the infrastructural and manpower support from the institute.

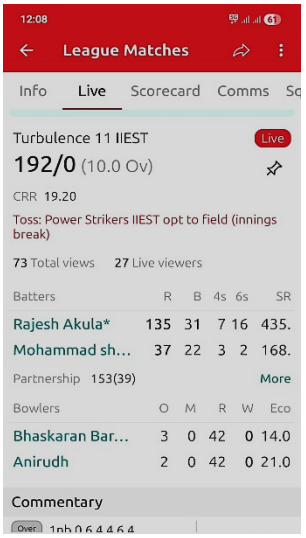
TCS management body visited the department on 19 November 2025, for possible collaboration.

The department observed 'Vigilance Awareness Week 2025' from 27 October 2025 to 2 November 2025. In that period, all the faculty and staff members of the department to an Integrity Pledge.

Dr. Apurba Das, Dr. Mukesh Kumar, Dr. Koustav Pradhan, Dr. Rajesh Akula, Dr. Kush Kumar Dewangan (Manager) and Dr. Mohammad Shahid Raza have represented IIEST Shibpur as a team member for Inter NIT cricket Tournament held in December 2026 at MANIT Bhopal.

Followed by the disheartening defeat in the tournament, the institute organised an inter-department practice tournament in the campus, where the team combining the ME Dept. and the AE&AM Dept. held 1st runner-up position.

Dr, Rajesh Akula became the most popular player of the tournament, for his all-round performance



Mr. Bijit Kumar Dey and Mr. Ashish Kumar Paul, two of the department's senior technical assistants, was the champion in Table Tennis (doubles)

Mr. Dilip Kumar Das, from the department's staff side, was the 1st runner-up in both Table Tennis (singles) and Badminton (doubles)

A ‘Clean Campus Drive (Swachh Shaniwar)’ was organized by the department on 07 March 2026.

Academic Arena

The first batch of NEP2020 curricula in both UG and PG programmes from AY 2025-26 have completed 1st semesters successfully. Under the programmes some new subjects and remodelling of the specialization and their curricula and some new subjects were introduced.

Relative Grading system were implemented with NEP2020, from this year.

Observing the alarming decline in the PG Admission, the Senate has decided to merge two ‘somehow’ performing specializations, namely, machine design and manufacturing science. The new specialization is decided with the name ‘Advanced Mechanical Design and Smart Manufacturing’ in the DFC. For very poor admissions for consecutive years, the Thermal Engineering specialization has been suggested by the Senate to be suspended for the upcoming year. Though after several discussions in DFC and HoD’s communication, the Chairman of Senate has agreed to continue the ‘Thermal Science and Energy Technology’ specialization honouring the previous agreements.

In this regard, Dr. Santanu Das has introduced a new PG course ‘Data-Driven Dynamical Systems’

It was proposed to build a ‘DIY & Tinkering Laboratory’ for the students verbally and in-principle, the HoD and some other senior professors and faculty members have agreed upon. The proposal was raised by Dr. Bidyut Pal, Dr. Santanu Das, Dr. Mohammad Shahid Raza, Dr. Debasish Das and Dr. Snehasish Bhattacharjee, primarily and then many other faculty members have shown interest to join. A place has also been identified at the 3rd floor. The proposal is to repair, repurpose old machine tools and develop new ones. The intent is to involve student to get engaged hands-on which inspire their innovative ideas.

Infrastructural Planning and Development

The Ramanujan Central Library has bought many important books related to UG and PG courses of mechanical engineering, as suggested by the eminent faculty members of the department, using the fund donated by one of our illustrious alumni Sri Debabrata Mukherjee, batch of 1999.

Renovations of the Gallery 6 ceiling has started once again, and the old junks are about to be removed.

Conference/Workshop/Lecture Series

Prof. Subhas Chandra Mondal and Dr. Apurba Das have organised a 5-day Executive Development Programme (EDP) on MECHANICAL DESIGN AND FABRICATION TECHNIQUES FOR RAILWAY, AUTOMOTIVE AND MANUFACTURING

INDUSTRIES IN ACCORDANCE WITH INDUSTRY 4.0 during 19- 23 January 2026 as Coordinator.

Prof. Subhas Chandra Mondal, Dr. Rajib Chakraborty and Dr. Mohammad Shahid Raza have organised a 5-Day Faculty Development Programme (FDP) on FRONTIERS IN ADVANCED MANUFACTURING TECHNOLOGIES during 01-05 December, 2025 as Coordinators.

Prof. Subhas Chandra Mondal, Dr. Mukesh Kumar and Dr. Kush Kumar Dewangan have organised a 5-Day Faculty Development Programme (FDP) on APPLICATION OF AI/ML IN MECHANICAL ENGINEERING during 02-06 February, 2026 (Online Mode) as Coordinators.

Prof. Subhas Chandra Mondal, Dr. Debasish Das and Dr. Kaustav Pradhan have organised a 5-Day Faculty Development Programme (FDP) on MONITORING & MODELLING OF MANUFACTURING PROCESSES WITH ADVANCED MATERIALS (M3PAM) during 16-20 February, 2026 (Online Mode) as Coordinator.

Research and Development

The department runs a full-time PhD program, where currently about **45** research scholars are engaged.

Sponsored Projects

Dr. Sudip Ghosh and Dr. Kaustav Pradhan have an R&D Project on 'Development of Solar Assisted Self-Sustained Circular Greenhouse for Protected Floriculture and Horticulture'. Funding Agency: WB DST. Project Value: 24.5 L. Period: 3 yrs

Dr. Bidyut Pal (PI), Dr. Apurba Das and Prof. Amit Roy Chowdhury (Co-PIs) have an ANRF Partnerships for Accelerated Innovation and Research (PAIR), with IISc Bangalore as Hub and IIEST Shibpur as a Spoke: Two proposals: "Investigating the Feasibility of Using Biodegradable Mg-Alloy as an Implant Material for Treating Femoral Neck Fractures" and "Design and Analysis of Artificial Intervertebral Disc using Advanced materials and structures", Rs 1.5 Cr, ongoing, October 2025.

Dr. Bidyut Pal (as Co-PI) has ANRF Partnerships for Accelerated Innovation and Research (PAIR), with IISc Bangalore as Hub and IIEST Shibpur as a Spoke: ICME-enabled high-throughput experimentation and mechanical testing for developing next-generation alloys for aerospace applications, October 2025.

Dr. Rajib Chakraborty (as PI) has DST ANRF (Under PAIR Project) sponsored project on Development of nano-ceramic particle-reinforced Nickel-based superalloy matrix composites through laser additive manufacturing for aerospace applications. Budget – Rs. 5.2 Cr. Ongoing for 5 years (June 2025 to June 2030).

Dr. Rajib Chakraborty (as Co-PI) has DST ANRF (Under PAIR Project) sponsored project on ICME-enabled high-throughput experimentation and mechanical testing for developing next-generation alloys for aerospace applications., Rs. 3 Cr. Ongoing

Dr. Mukesh Kumar has submitted one proposal as PI.

Dr. Debasish Das has submitted one proposal as PI and three proposals as Co-PI with other institutes.

Dr. Snehasish Bhattacharjee and Dr. Debasish Das, as Co-PIs, have submitted a proposal in response to ISRO Respond Basket, 2025, which is under review.

Consultancy Projects

Prof. Subhas Chandra Mondal has an on-going consultancy Project in BIRATI METRO RAIL PROJECT of project value Rs 1,03,84000 as PI (CI)

Dr. Aritra Ganguly has one ongoing consultancy project with Top Grip Instruments Ltd. of 3.2 lacs.

Dr. Apurba Das has one ongoing consultancy on SAFETY AUDIT OF ROPEWAY AT DEWAS (MP), Funded by TREHAN DAMODAR ROPEWAYS PVT LTD., Amount Rs. 5,66,400/-

Dr. Apurba Das has one consultancy on Comparative Study of Different Types of Welded Joints between Copper Flange and Seamless Copper Pipe, a BARC Project of Rs 59,000/-

Dr. Apurba Das has one consultancy on Technical Audit and Safety Inspection on Darjeeling Rangeet Valley Passenger Ropeway, Funded by Conveyor & Ropeway Services Pvt. Ltd. of Rs. 2,47,800/-

Collaborations

Prof. Subhas Chandra Mondal was one of the coordinators for the MOU between University of Maribor, Slovenia and IIEST Shibpur in March 2026.

Dr. Sudip Ghosh has collaboration with Jalpaiguri Government Engineering College for the DST WB sponsored project.

Dr. Bidyut Pal has collaborations with IISc Bangalore, IIT Jodhpur, IIT(ISM) Dhanbad and Amrita Viswa Vidyapitham.

Dr. Snehasish Bhattacharjee has collaborations with Jadavpur University.

Dr. Mukesh Kumar has collaborations with MANIT Bhopal and HPU Shimla.

Dr. Debasish Das has collaborations with IIT Jodhpur and Jadavpur University.

Dr. Mohammad Shahid Raza has collaborations with the Department of Mechanical Engineering, SR UNIVERSITY, Warangal.

Patents

Dr. Mukesh Kumar has filed two patent applications

Publications

Journal Publication

Deepak Kumar Singh, Arkadeb Banerjee and Debasis Datta, Experimental determination of Johnson–Cook strength and failure model constants for AA1100H14 aluminum alloy and validation through ballistic impact testing, Published online February 5, 2026 in "Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications", DOI:10.1177/14644207261417664

Krishna Biswas and Debasis Datta, Ballistic performance of bare ceramic, bare FRP-Composites and hybrid ceramic-FRP composite target plates: Experimental and Numerical Investigations, Accepted for publication in Mechanics of Advanced Materials and Structures in November 2025, now in press.

Kundu, P.K. and Chatterjee, S., 2026. On the principle of ultra-sensitive stiffness or mass sensors using Feedback-Excited Virtual-Real hybrid resonators. Measurement, p.121247.

Kundu, P.K. and Chatterjee, S., 2026. Experimental characterization of modal nonlinearities of a cantilever beam by feedback excitation: PK Kundu, S. Chatterjee. Nonlinear Dynamics, 114(3), p.152.

Dhobale, S.M. and Chatterjee, S., 2025. Synthesis of a universal second-order limit cycle oscillator for prescribed phase-plane trajectories–A data-driven approach. Chaos, Solitons & Fractals, 201, p.117276.

Dhobale, S.M. and Chatterjee, S., 2025. An improved adaptive sliding mode controller for generating periodic motions in mechanical systems–a model-free approach. Communications in Nonlinear Science and Numerical Simulation, 151, p.109128.

Sardar, S., & Dey, P. P. (2026). Variation of dislocation density by controlling the tool penetration rate to bimetallic AA2024-H2 and C10200 products processed through friction stir spot welding. Journal of Adhesion Science and Technology, 40(5), 904–923. DOI:10.1080/01694243.2025.2570409

Rao, S.P., Sivaprasad, S., Bar, H.N. and Dey, P.P., 2025. Constitutive modeling and experimental analysis of asynchronous multiaxial fatigue in 304LN stainless steel using Bayesian optimization. International Journal of Fatigue, p.109214.

Gangwar, Sukhdev; Mondal, Subhas Chandra and Ghadai, Ranjan Kumar, Development and performance evaluation of AlTiN-coated cutting tools using advanced PVD techniques, DOI: 10.1140/epjs/s11734-026-02235-9, The European Physical Journal Special Topics, pp.1-16, 2026

Gourab Sen, Subhas Chandra Mondal and Ranjan Kumar Ghadai, Development and performance analysis of Copper–Graphene composite electrodes for electrical discharge machining applications, Journal of The Institution of Engineers (India): Series C; DOI:10.1007/s40032-025-01299-1, 2025, 107(1), pp.419-430.

Subham Kundu and Subhas Chandra Mondal, Application of powder metallurgy-processed Al-Cu-CNT composite electrodes for surface modification of inconel 718 using EDM, DOI: 10.1177/02670844251403870, Surface Engineering, 2025, 42(1), pp.20-42.

Gourab Sen and Subhas Chandra Mondal, Synthesis and processing techniques of copper–graphene reinforced metal matrix composites: a review, Vol. 7 (3) DOI 10.1088/2631-8695/adfdad, pp. 1-44, Engineering Research Express, 2025

Subrata Mondal, Sutanu Misra, Goutam Paul, Koustov Mondol, Subhas Chandra Mondal, Exploring Machinability of Graphene Reinforced Aluminium Metal Matrix Composites: A Machine Learning Approach, accepted for publication 2025, Sadhana

Subrata Mondal, Goutam Paul, Koustov Mondol, Subhas Chandra Mondal, Electric Discharge Machining with Graphene Reinforced Aluminium Metal Matrix Composite (Gr Al MMC) Tool for EN 31 Die Steel Work Piece, Vol 106 (2), Journal of The Institution of Engineers (India): Series C SCI publication, 2025

Biswas, S.S., Banerjee, S., Kudiyarasan, S., Ghosh, S. and Kumar, P., 2025. Implementation of Leak before Break (LBB) criteria in Fast Spectrum Reactor. International Journal of Advanced Nuclear Reactor Design and Technology.

Iyer, P.K., Abishraj, V.R., Ganguly, A. and Maiya, M.P., 2025. Numerical Studies of a Compact Desiccant-Coated Maisotsenko Cycle Cooler for Attaining Sub-Dew-Point Temperatures. Journal of Energy Resources Technology, Part A: Sustainable and Renewable Energy, 1(6), p.061702.

Vishwakarma, A. and Rana, U., 2026. Numerical investigation of parameter interactions in thermal behavior of prismatic $LiFePO_4$ cells at high C-rates. International Communications in Heat and Mass Transfer, 172, p.110502.

Vishwakarma, A. and Rana, U., 2025. Analysis of the influencing parameter on the thermal runaway propagation in prismatic battery: A numerical and statistical approach. Journal of Thermal Analysis and Calorimetry, pp.1-23.

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Das, S., Saha, S., Molla, S., Kumar, T.S.S. and Das, S., 2025, September. Dynamic Response of Epicyclic Gear Trains Under Non-Ideal Excitation. In International Mechanical Engineering Congress and Exposition-India (Vol. 89176, p. V005T10A105). American Society of Mechanical Engineers.

Chakraborty, S. and Das, S., 2025. Comparative analysis of soft-impact and Gent models used in dielectric membrane based vibro-impact energy harvesting. International Journal of Non-Linear Mechanics, p.105238.

Das, D., Ghosh, P., Rout, M., Davinci, M.A. and Aashranth, B., 2025. CNN-and ANFIS-based modeling of high-temperature compression test of K500 material with experimental validation. Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engg, p.09544089251396285.

Chowdhury, S.R. and Pradhan, K., 2026. An assessment of performance of bifurcations in thermal systems with new correlations for estimating Nusselt number and loss coefficient. International Communications in Heat and Mass Transfer, 172, p.110116.

Sah, S., Sardar, S. & Das, D. Optimization of W-EDM process for superalloy by different objective weight integrated MCDM - a comparative study of CoCoSo and CoCoFISo methods. International Journal of Interactive Design and Manufacturing 20, 381–406 (2026). https://doi.org/10.1007/s12008-025-02397-1

Roy, D., Joseph, S.M., Dewaangan, K.K., Rasheed, A., Jain, S., Singh, A., Chakravortty, D. and Basu, S., 2025. Insights into the mechanics of pure and bacteria-laden sessile whole blood droplet evaporation. Journal of Fluid Mechanics, 1021, p.A13.

Dewangan, K.K., Satbhai, O., Gavel, S.K. and Rokhade, K.K., 2026. A Comprehensive Review of Flashing Phenomena and Evaporation Wave Propagation in Superheated Liquids. Microgravity Science and Technology, 38(1), p.11.

Dewangan, K.K., Gopan, G. and Pattanayak, S., 2026. Overview of hydrogen production processes: Health and environmental impact. Environmental Progress & Sustainable Energy, 45(1), p.e70229.

Agharkar, A.N., Singh, A., Dewangan, K.K., Chakravortty, D. and Basu, S., 2025. How substrate temperature shapes Salmonella Typhimurium deposition patterns and pathogenesis in evaporating droplets. International Journal of Multiphase Flow, p.105592.

Lawal, I.O., Mekid, S. and Raza, M.S., 2026. A Critical Review on Feedstock Mixing Strategies, Manufacturing Processes, Applications, and Tribological Properties of Functionally Graded Materials. Arabian Journal for Science and Engineering, pp.1-62.

Lawal, I.O., Mekid, S. and Raza, M.S., 2026. Role of sintering atmosphere in controlling porosity, microstructure and performance of 3D printed polylactic acid/copper composites. Progress in Additive Manufacturing, pp.1-26.

Ahmad, G.N., Raza, M.S., Haldar, B., Kumar, I., Singh, N.K. and Elfar, A.A., 2025. Correlating Microstructural and Mechanical Property Alteration with Process Parameters Using Thermal Signature Monitoring of Laser-Welded Inconel 625 Superalloy. Crystals, 15(12), p.1009.

Conference Proceedings/Presentations

Pritam Pain and Debasis Datta. Investigation on Thermo-Mechanical Properties of Graphene-Carbon Nanotube/Thermoplastic Polyurethane Hybrid Nanocomposites. Name of the Conference: 3rd International Conference on Mechanical Engineering 2026 (INCOM 2026) Organized By: Department of Mechanical Engineering, Jadavpur University. Conference Dates: 8-10 January, 2026 Publication Status: Published by Jadavpur University Press in the Proceedings of 3rd International Conference on Mechanical Engineering (Page No.: 489 - 492) with ISBN: 978-81-993635-8-8. Current Status: Selected by conference authority and communicated to the journal "Sādhanā" for possible publication.

Debasis Datta and Subhasis Mondal. Ultrasonic NDE for Real-Time Monitoring of Vulcanization in Nitrile Butadiene Rubber. Accepted for oral presentation in the 14th European Conference on Non-Destructive Testing (ECNDT) during 15-19 June, 2026 to be held in Verona, Italy.

Mir Abul Hassan and Subhas Chandra Mondal, Optimizing Weld Bead Geometry in Flux-Bounded TIG Welding of Al 6061: Effects of Flux Composition, Current, and Flux Gap, International Conference on Advanced Manufacturing and Industry 4.0, 2026 at IISC Bangalore.

Maity, Arindam; Doloi, Biswanath; Mondal, Subhas Chandra and Bhattacharyya, Bijoy, Experimental Investigation into Jet Electrochemical Micro Machining (Jet EMM) of Ti6Al4V, 10th International and 31st All India Manufacturing Technology, Design & Research (AIMTDR 2025) December, 2025

Ajay Vishwakarma, Uttam Rana, Numerical Investigation of Coolant Inlet Configurations for Thermal Homogeneity in 20Ah Prismatic Li-ion Batteries at High Discharge Rates, in 25th IEEE conference on Sustainable Energy and Future Electrical Transportation (SEFET),
DOI: 10.1109/SEFET65155.2025.11255152

Ajay Vishwakarma, Uttam Rana, Optimizing Cell Insert Structure for Enhanced Thermal Management in Air-Cooled Battery Packs, in 25th IEEE conference on Sustainable Energy and Future Electrical Transportation (SEFET),
DOI: 10.1109/SEFET65155.2025.11255088

Ajay Vishwakarma, Uttam Rana, Analysis of Curved Sidewall Dump Diffusers for Gas Turbine Combustors (Paper ID: 224), 3rd International Conference on Mechanical Engineering 2026, Organised by the Department of Mechanical Engineering, Jadavpur University8-10 January, 2026

Nath S, Pal B, Finite Element Analysis of A Topology-Optimised Auxetic Tibial Implant to Prevent Aseptic Loosening, Jadavpur University, Kolkata, 8-10 January 2026, paper presented at the 3rd International Conference on Mechanical Engineering (INCOM 2026), 2026

Saptarshi Saha, Manidipto Mukherjee, Somnath Nandi, Apurba Das, Amit Karmakar “Influence of WC reinforcement on the Wear Characteristics of AISI 316L WAAM Cladding on Medium Carbon Steel” 10th International & 31st All India Manufacturing Technology, Design, and Research Conference (AIMTDR 2025)

Sourav Majumdar, Arijit Sinha, Apurba Das, Priyankar Datta, Debabrata Nag “Evaluation of Elastic Constants of Artificially Aged 6061-T6 Aluminum Alloy using Ultrasonic Testing” 3rd International Conference on Mechanical Engineering Jadavpur University Kolkata, India: (INCOM 2026). Jan 2026

Dr. Mukesh Kumar has two conference papers accepted for publication

Dr. Debasish Das has two published and four accepted conference papers for presentation

M.S. Raza, P. Patra, P. Saha, Effect of Addition of CNT in Mitigating Dissociation of B4C and In Situ Formation of TiC on Ti64 Substrate During Laser Cladding Process to Achieve Hard Condensed Coating, 241–256, Trends in Material Processing (AIMTDR-2023 2023), 2026

Mohammad Shahid Raza, Partha Saha, Process Monitoring and Numerical Analysis of Mechanism of Laser Forming in Open-Cell Aluminum Foam, 301, (Advanced Joining Techniques: Proceedings of the AIMTDR 2023), 2026

Book Chapters

Dr. Mukesh Kumar has two accepted book chapters, which are presently under review.

Kumar, P., Hussain, M., Raza, M.S. and Jain, A.K., 2026. Introduction to Advanced Coating and Cladding Technologies. In Advanced Coating and Cladding Technologies (pp. 1-40). CRC Press.

Outreach Activities

Industry/Academia Visit

Prof. Subhas Chandra Mondal attended the *International Conference on Advanced Manufacturing and Industry 4.0*, (I-4 AM 2026) at IISc, Bangalore during 08-09 January 2026.

Prof. Subhas Chandra Mondal visited TCS Biological Science Dept. at Geetanjali Bhavan, New Town, Kolkata on 25th February 2026

Dr. Mohammad Shahid Raza conducted One day visit with a team of Faculty members from IIEST Shibpur to MSME surgical cluster in Baruipur for a probable collaboration for Semi automatization of the manufacturing system

Invited Talks

Dr. Bidyut has delivered an invited talk on '3D-Printed Lattice Ti-alloy for Orthopaedic Implants' in a faculty development program on "Monitoring & Modelling of Manufacturing Processes with Advanced Materials (M3PAM)", organised by the Department of Mechanical Engineering, IIEST Shibpur, 16-20th February 2026.

Dr. Bidyut has delivered an invited talk on "CBDE: My experience with LbD activities" as a Resource Person in a MoE-funded Capacity Building in Design and Entrepreneurship (CBDE) pedagogy workshop on "Design and Entrepreneurship", held at NITK Surathkal, under MMTTP, 29th-30th December 2025.

Dr. Bidyut has delivered an invited talk on 'Magnesium alloy-based implants for hip fracture fixation' in an Indo-Australian Workshop on "Mg-based Alloys and its Applications as Bio-implants", organized by the Department of Aerospace Engineering and Applied Mechanics, IIEST Shibpur and Department of Metallurgical and Materials Engineering, IIT Kharagpur, in association with Monash University, Australia, held at IIEST Shibpur on 11th-12th December 2025.

Dr. Santanu Sardar has delivered an invited talk on 'Optimization of Wire Electrical Discharge Machining Performances Emphasizing Surface Integrity and Sustainability Aspects of In-situ Al-Al3Fe composites' in a faculty development program on "Monitoring & Modelling of Manufacturing Processes with Advanced Materials (M3PAM)", organised by the Department of Mechanical Engineering, IIEST Shibpur, 16-20th February 2026.

Dr. Rajesh Akula has delivered an invited talk on "Applications of AI/ML in thermal management of Electric Vehicles" in a faculty development program on "Application of AI/ML in Mechanical Engineering", organised by the Department of Mechanical Engineering, IIEST Shibpur, 02-06th February 2026.

Dr. Rajesh Akula has delivered an invited talk on "Smart thermal management of Li-ion cells" in a faculty development program on “Next Gen Thermal Engineering”, organised by the Department of Mechanical Engineering, Gayatri Vidya Parishad College of Engineering, 09-13th February 2026.

Dr. Rajesh Akula has delivered an invited talk on "Thermophysical property prediction of Li-ion cells: A machine learning approach" in a faculty development program on “Next Gen Thermal Engineering”, organised by the Department of Mechanical Engineering, Gayatri Vidya Parishad College of Engineering, 09-13th February 2026.

Faculty Activities

Prof. Subhas Chandra Mondal was the chairman of the "*Constitution Day*" celebration committee in the institute

Prof. Subhas Chandra Mondal was one of the members of the Committee for the Declaration of Junk of the Institute.

Dr. Bidyut Pal has attended a workshop on "Becoming an Effective Doctoral Supervisor", conducted by Prof. Maresi Nerad (University of Washington, Seattle, USA), organised by the ANRF PAIR Programme and DST Centre for Policy Research, Indian Institute of Science (IISc) Bangalore, during 16-17 March 2026.

Dr. Bidyut Pal has attended a Capacity Building in Design and Entrepreneurship (CBDE) pedagogy workshop on “Design and Entrepreneurship”, held at NITK Surathkal, under MMTTP, 29-30 December 2025.

Dr. Bidyut Pal has attended an Indo-Australian Workshop on "Mg-based Alloys and its Applications as Bio-implants”, organized by the Department of Aerospace Engineering and Applied Mechanics, IIEST Shibpur and Department of Metallurgical and Materials Engineering, IIT Kharagpur, in association with Monash University, Australia, held at IIEST Shibpur on 11th-12th December 2025.

Under the guidance of Dr. Santanu Das, PIC SME, the students of the department have organised the departments flag-ship technical event IMPETUS 9.0 and Departmental Freshers' welcome.

Dr. Debasish Das was the Session Chair for the 4th International conference on ‘Industrial Engineering and Mechanical Power (IEMPOWER 2025)’ on 19.07.2025 at IEM Kolkata

Dr. Kush Kumar Dewangan has attended one FDP on Next Generation Engineering Practices: Materials, Design and Manufacturing, conducted at Marathwada Mitra Mandal’s College of Engineering, Karvenagar, Pune, 22-27 December, 2025

Dr. Mohammad Shahid Raza has attended One-week Faculty Development Program on Image Processing & Computer Vision Organized by Department of Production & Industrial Engineering, National Institute of Technology Jamshedpur in Association with Pantech e-Learning during 13-18 October 2025.

Achievements

Faculty Achievements

Dr. Sudip Ghosh was the Nominated member to BIS PCD 7:6 (Biofuels Sub-Committee)

Dr. Sudip Ghosh was the Nominated Member to ISO TC 238 Working Group

Dr. Bidyut Pal was selected as the member of the Editorial Board of the IOPP journal ‘Medical Engineering and Physics’, in February 2026.

Dr. Debasish Das has obtained membership of ‘The Indian Institute of Welding (IIW)’. His membership No is KOL/M/R-14935 since 1st Sep 2025.

Students Achievements

Rajdeep Sarkar – GAABESU Research Award 2025; Phd offer from IIT Kanpur; He has published two papers entitled: ‘ A Biomimetic Titanium Scaffold With and Without Magnesium Filled for Adjustable Patient Specific Elastic Modulus’ and ‘AI-Driven Optimisation of Functionally Graded Porous Dental Implants for Patient Specific Osseointegration and Mechanical Harmony’. Organised Mechanical SIG, IMPETUS 9.0, and Alumni Day 2025. Participated in ‘Lab to Market’ workshop by IHFC IITD

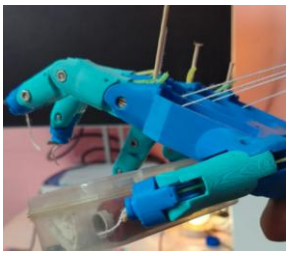
Bishesha Dash – GAABESU Research Award 2025; Homi-Bhabha Scholarship; She has published two papers, entitled: ‘Adaptive fuzzy predictor based fast terminal sliding mode controller design for two-link robot manipulator’ and ‘Determination of the position and orientation workspaces of the 6-rss parallel manipulator and its experimental validation’. Participated in National Conference on Industrial Problems on Machines and Mechanisms, 2025.

Tuhin Mondal – GAABESU Alumni Fellowship 2025 for Excellence. He received Research Grant for a 6-month research project from IHFC Ready Program associated with IIT Delhi. participated as Student Volunteer in ICERTSD 2025 Conference and GAABESU Global Alumni Day 2025

Sneha Rani – GAABESU Alumni Fellowship 2025 for Excellence

Abhishek Kumar – GAABESU Scholarship Award for Academic Excellence, 2025. He won the 3rd prize at Verse Wars poetry competition organized by LitSoc IIEST, Shibpur

At IInvenTiv 2026 hosted by IIT (ISM) Dhanbad, 6-7 April 2026, Aditya Joshi, Subhradeep Santra and Vaibhav Sarkar from the department, under the guidance of Dr. Rajesh Akula, had the opportunity to showcase a Low-Cost EMG-Based Prosthetic Hand.



Diya Hansda – Gold in Long Jump, Gold in 200mtrs, track event, Bronze in 400mtrs, bronze & silver in relay races, in Annual Athletic Meet 2026. Organised IFL 1.0 (IIEST football league for girls) and participated in All India Inter NIT 2025 and reached quarter final in Futsal, held in NIT Jamshedpur

Akash S – Champion of Champions Track Events, 4 Gold medals in 800m, 1500m, 3000m and Inter-Hostel Relay Race, Silver in Inter-Departmental Relay Race, Bronze in Inter-Year Relay Race in Annual Athletic Meet, 2025. He was the Main Coordinator in IMPETUS 9.0, 2026. He participated in multiple All India Inter-NIT Tournaments – Kho-kho 2025 at NIT Rourkela, Kabaddi 2025 at NIT Delhi.

Komal Sharma – National Winner of ‘Speak Out for Engineering (SOFE) 2025’ under the mentorship of Prof. Bijan Kumar Mandal, organized by the Institution of Mechanical Engineers (IMechE), and was selected to represent India at the South Asia level in Maldives. However, due to passport-related issues, she was unable to attend the event in person and participated in the online mode. Although the judges acknowledged

her as the best presenter, she was not eligible for the award due to the requirement of physical presence.

She also received the GAABESU research fellowship award (Gouri and Jitendra Mohan Mazumder Undergraduate Research Award – II). Her paper on 'Numerical Study on CI Engine Characteristics Using Diesel-Algal Biodiesel and Diesel-Ethanol Blends' is forthcoming in Springer Thermal Proceedings. She presented a paper at the 3rd ICERTSD 2025. She also secured Global Rank 3 in the Technical Digital Poster Competition (Track 2) at ASME E-Fest Tech Connect 2025.

Kaladhar Gopal – Bharat Navnirmaan City Finale Winner 2026 organised by NICMAR in collaboration with Times of India. Received Exide Diksha Scholarship for Academic Excellence 2026. He held 1st position in Linex - Line Follower Bot category in Robocon 3.0, 2026 ; He got 2 months internship offer at Tega Industries Ltd through MinExpert Case Study Competition organised in IMPETUS 9.0 ; held 1st position in Nirmaan - Idea Pitching competition organised in Metallum 7.0; held 3rd position in poster presentation competition in Metallum 7.0; held 1st position in Adhyayan - Case Study Competition organised in Sphuran 4.0; he was the Design Team Head in 3rd ICERTSD 2025

Ankit Kumar – GAABESU BEC Mechanical Engineering Award I 2025 Alumni Fellowship for Excellence. He was the Design Executive in IMPETUS 9.0. He participated in All India Inter NIT Tournament -Kabaddi NIT Delhi.

Maneet Chatterjee – received IEEE GRSS Society Travel Grant for IGARSS 2025 and GAABESU Research Award (1965 ME Batch). He has presented a paper in IEEE IGARSS 2025, Brisbane, Australia entitled: 'EEMamba: A Hardware-Aware Energy-Efficient State-Space Model for Eurosat Classification' and got it published. He also presented a poster at Ansys Techcon 2025, Pittsburgh, USA, and also presented a paper at AIIoT 2025, organised by IIEST Shibpur, at Kolkata.

Ankita Kumari – received Exide Diksha Scholarship for Academic Excellence 2026.

Manisha Singh – received Exide Diksha Scholarship for academic excellence; TEXMiN UG fellowship and GAABESU Scholarship award. She participated in MinExpert Case study Competition under Impetus 9.0

Students Corner

Society Activity

Society of Mechanical Engineers, IIEST Shibpur has organised many activities throughout the year in collaboration with several national and international professional bodies, some of those are:

SOFE 2025 (Speak Out for Engineering) — 28 October 2025 (SME in collaboration with IMechE)

The IMechE IIEST Shibpur Student Chapter successfully organized SOFE 2025, where participants showcased innovative engineering ideas, creativity, and communication excellence. Judged by esteemed

professors, the event concluded successfully with winners advancing to represent IIEST Shibpur at higher stages, reflecting innovation, clarity, and professional growth.

CAD Workshop — 29 October 2025 (SME in collaboration with SAE)

The SAE IIEST Shibpur Students' Chapter successfully conducted the Free CAD Workshop, marking the beginning of the CAD competition season. Students gained hands-on experience with professional CAD tools and explored the importance of design innovation in modern engineering, fostering creativity, collaboration, and technical excellence. The workshop served as a valuable platform for young engineers to enhance their understanding and prepare confidently for upcoming CAD challenges.

Auto Quest — 6 November 2025 (SME in collaboration with SAE)

The SAE IIEST Shibpur Students' Chapter successfully organized AUTO-QUEST, an idea pitching competition promoting innovation in modern mobility and automotive technology. Participants showcased creative and impactful solutions in areas like sustainable vehicle design, automation, smart systems, and energy efficiency, fostering teamwork, technical excellence, and forward-thinking approaches toward shaping the future of mobility.

Career Guidance Session (Subhechha Paul) — 10 January 2026 (SME in collaboration with ASME)

ASME IIEST Shibpur successfully conducted a Career Guidance Session featuring Ms. Subhechchha Paul, a

PhD/MS student at Stanford University and an alumna of IIEST Shibpur (Batch 2017–2021). She shared valuable insights from her academic and research journey, particularly in the field of energy systems and sustainable technologies, inspiring students to explore opportunities in higher studies and research. The session witnessed enthusiastic participation, leaving attendees motivated to pursue impactful and innovative career paths in engineering and beyond.

Instruo 14 (CAD Catalyst Event) — 12 January 2026 (SME)

INSTRUO 14, the techno-management fest of IIEST Shibpur, hosted CAD Catalyst, organized by the Society of Mechanical Engineers (SME). The event offered students a strong platform to refine CAD skills, explore innovative design concepts, collaborate with peers, and engage in engineering tasks that strengthened creativity and technical understanding. It also encouraged problem-solving, precise modeling, and exposure to real-world design scenarios, helping students build confidence and improve their engineering competence.

Auto Quest – 6 November 2025 in collaboration with SAE IIEST Shibpur Students' Chapter

The SAE IIEST Shibpur Students' Chapter successfully organized AUTO-QUEST, an idea pitching competition promoting innovation in modern mobility and automotive technology. Participants showcased creative and impactful solutions in areas like sustainable vehicle design, automation, smart systems, and energy efficiency, fostering teamwork, technical excellence, and forward-thinking approaches toward shaping the future of mobility.

Impetus 9.0 — 13-15 February 2026 (SME)

The Society of Mechanical Engineers (SME), IIEST Shibpur, successfully organized the 9th edition of its annual technical fest, Impetus, from 13th to 15th February 2026. The event witnessed enthusiastic participation from students, faculty, and professionals, making it a vibrant showcase of Organized by the Society of Mechanical Engineers (SME), IIEST, Shibpur, Impetus 9.0, held from 13th to 15th February 2026, was a celebration of innovation, practicality, and purposeful collaboration.

Impetus acts as a bridge between the dynamic needs of industry and the evolving landscape of academia. By fostering competitiveness and hands-on learning, the fest inspires students to approach engineering with curiosity, creativity, and a problem-solving mindset. At the heart of Impetus 9.0 was the prestigious PC Ganguly Memorial Industry-Academia Meet (IAM), a keystone event symbolizing the synergy between academic excellence and industry advancement. Held at the Institute Hall on 15th February 2026

Valorant was an e-sports event that showcased strategic gameplay, teamwork, and quick decision-making

Scrapyard promotes sustainable thinking through creative reuse of materials.

Death Race featured high-energy RC vehicle challenges on dynamic tracks

Mechathlon focused on ideation and pitching solutions to real-world engineering problems

CADathon challenged the students to create accurate and innovative 3D designs under constraints.

Yantra Search was a campus-based technical scavenger hunt blending mechanical knowledge with problem-solving

IQ Ignition was a fast-paced quiz testing technical and general awareness



Minexpert, an industry-oriented case study competition emphasizing analytical thinking and real-world applications




In Drone Pursuit, where participants navigated complex obstacle courses for precision flying. Though, the drone pursuit event has been cancelled due to ensuing GATE exams, and insufficient participants and volunteers available.

The organisers at the end:

SIG Launch (Dr. Narayan Kar) — 7 March 2026 (SME in collaboration with GAABESU)

IIEST Shibpur Mechanical Engineering SIG successfully conducted its lecture series with two insightful sessions focusing on the future of mobility and engineering innovation.

The launch session, titled "Powering the Future: Engineering the Next Generation of Electric Vehicles", featured Dr. Narayan Kar, Tier 1 Canada Research Chair in Electrified Vehicles and Distinguished University Professor at the University of Windsor, Canada. He shared valuable insights into advancements in electric vehicle technology and sustainable mobility.

SIG Lecture (Dr. Partha Goswami) — 14 March 2026 (SME in collaboration with GAABESU)

The second session, "The Paradigm Shift: Digital Transition Reshaping the 100-Year-Old Mobility Industry", featured Dr. Partha Goswami, IIT Kharagpur alumnus and a renowned mobility strategist with over 30 years of experience in the Detroit auto industry. The session was also graced by Dr. Bijan

Kumar Mandal, Professor, Department of Mechanical Engineering, IIEST Shibpur. Dr. Goswami highlighted the impact of digital transformation on the mobility sector and emerging opportunities in the evolving engineering landscape.

Both sessions witnessed enthusiastic participation and provided valuable insights, motivating students to explore innovative and impactful career paths in engineering and beyond.

Freshers' Welcome (Batch of 2028) — 25 March 2026 (SME)

The Society of Mechanical Engineers (SME), IIEST Shibpur, warmly welcomed the Batch of 2028, encouraging students to embrace new challenges, explore their interests, and unlock their true potential. The induction marked the beginning of an exciting journey in the field of mechanical engineering—filled with learning, innovation, and opportunities to grow both technically and personally.

The Society of Mechanical Engineers (SME) is the students' society of the Department of Mechanical Engineering at IIEST Shibpur, dedicated to promoting academic excellence, technical innovation, and holistic development among students. It acts as the central platform for all departmental activities, workshops, seminars, and student led initiatives. Under the aegis of SME, several renowned international student chapters function actively, including ASME, SAE, and IMechE. These student sections work collaboratively under SME to enhance industry exposure, foster innovation, and encourage participation in national and international competitions, thereby contributing to the professional growth of aspiring mechanical engineers.

- End -