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R&D Newsletter

Quarterly Newsletter of the Office of the Dean (R&D), IIT(ISM) Dhanbad

Vol. 5, April-June, 2025



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About R&D Newsletter

The quarterly newsletter of the Office of the Dean (R&D), IIT (ISM) Dhanbad called "*R&D Newsletter*" is an in-house publication. The e-version of this newsletter is available on our official website at [www.https://people.iitism.ac.in/~research/](https://people.iitism.ac.in/~research/)

Dear Reader,

This issue of "*R&D Newsletter*" is to showcase our excellence in academic and research activities. With our ever expanding academic network and research base, we are able to show our strength as an Institute of National Importance.



Dean (R&D)

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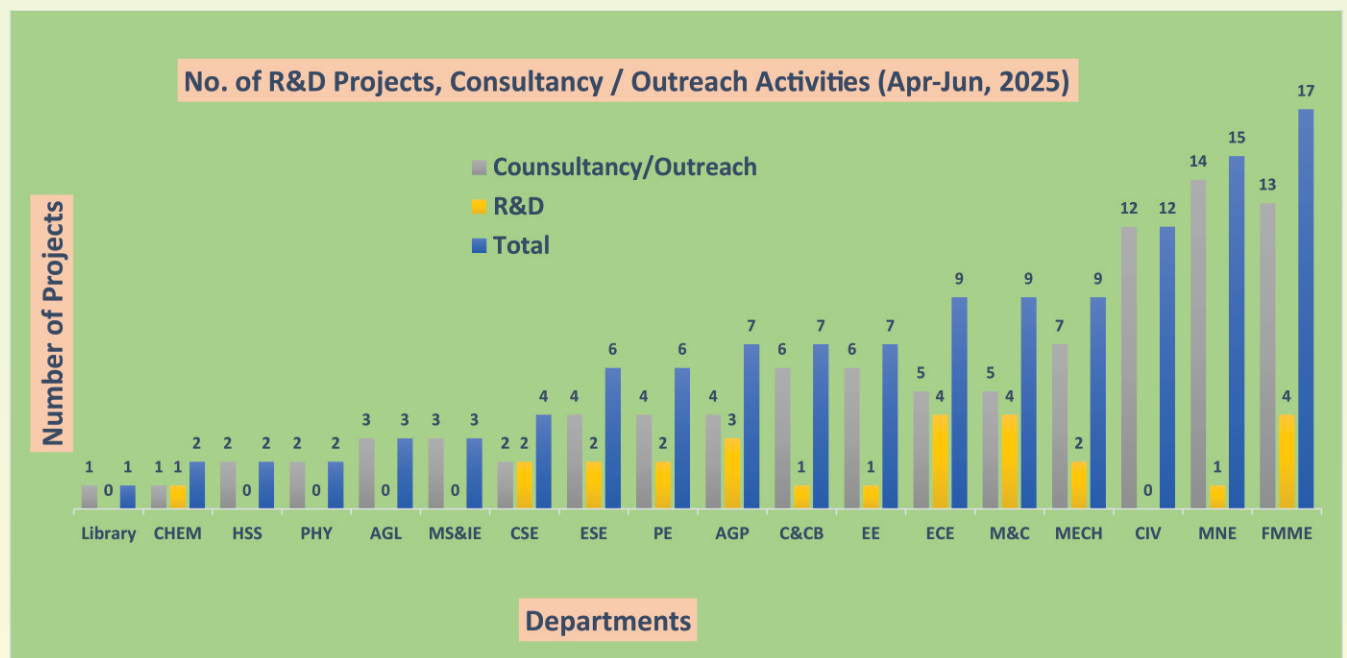
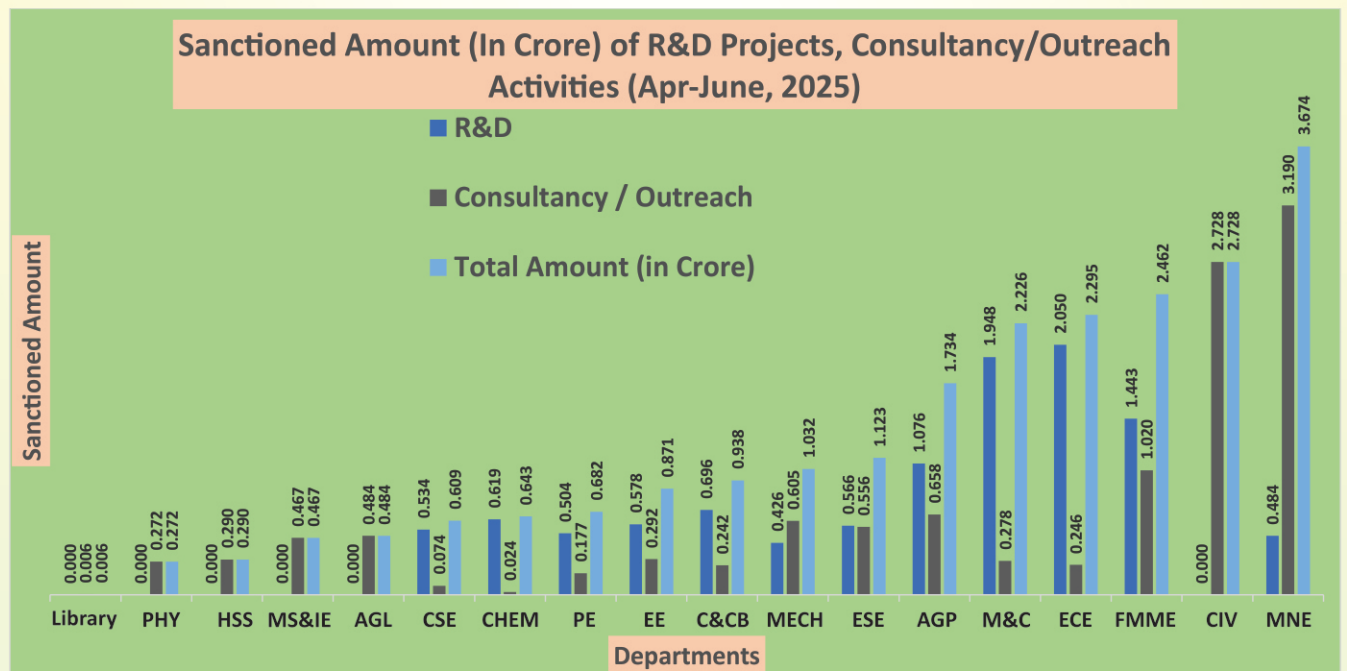
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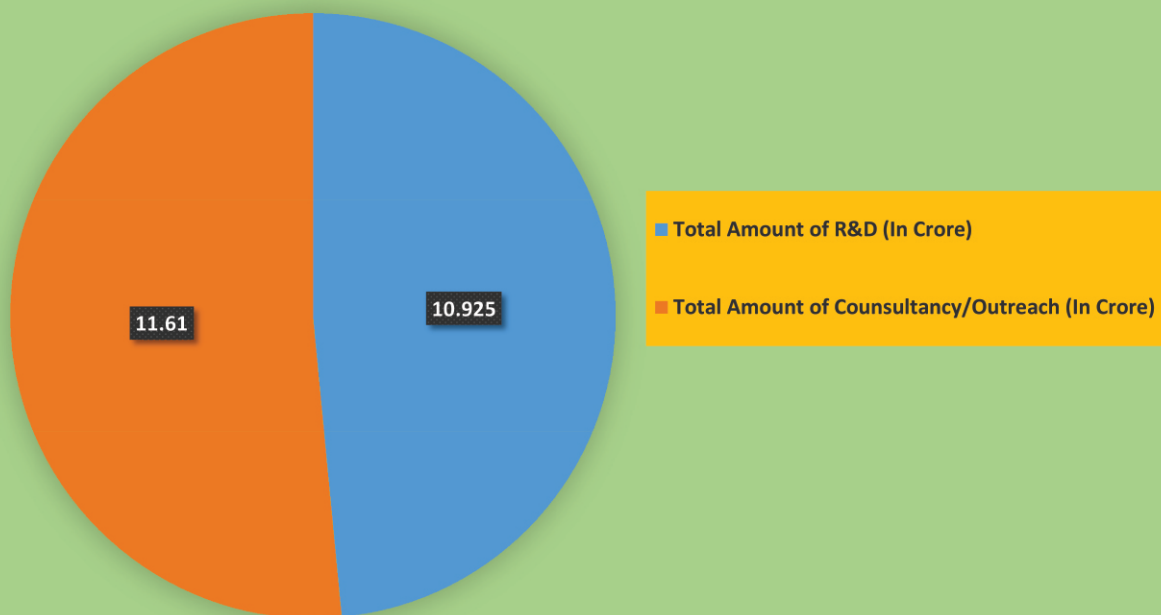
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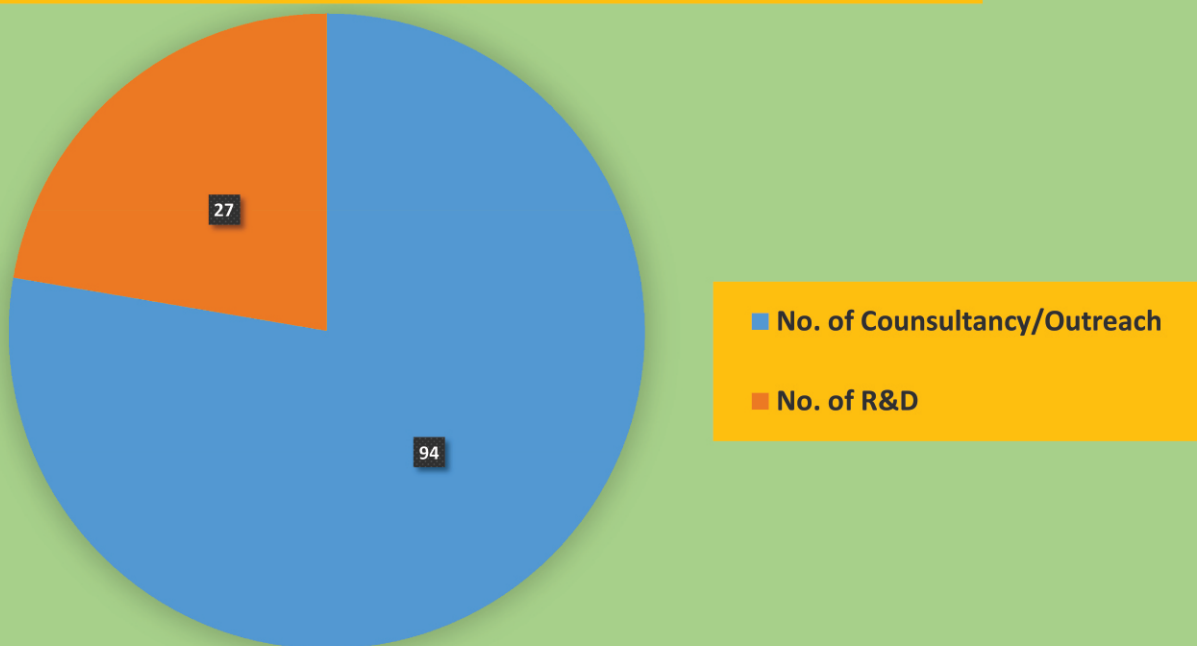
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Sanctioned Amount (In Crore) of R&D Projects, Consultancy/Outreach Activities (Apr-Jun, 2025)



No. of R&D Projects, Consultancy/Outreach Activities (Apr-Jun, 2025)



Publications

Total No. of Publications : 278

Selected Publications

- S. Mohanty, S. Chaudhuri, K. Chattopadhyay, N.M. Patrick, N. Vats, A.K. Bhaumik. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 670, 112971, **2025**.
- S. Sahoo, **A.S. Majumdar**, R. Anand, D. Ray, J.M. Fuenlabrada. *"Minerals"*, 15(6), 572, **2025**.
- P. Prusty, S.K. Mohakud, A.R. Mandal, K.A. Parray, S.H. Farooq. *"Geological Journal"*, **2025**.
- J.S. Sathapathy, S. Singh, P.R. Sahoo. *Acta Geologica Sinica (English Edition)*, 99(2), **2025**.
- S. Mishra, A.K. Prasad, A. Vinod, A. Shukla, S. Mukherjee, B. Purkait, A.K. Varma, B.C. Sarkar. *"Scientific Reports"*, 15(1), 13786, **2025**.
- S. Firdaus, A. Anwar, S. Mohapatra, P.R. Sahoo. *Data in Brief*, 60, **2025**.
- Seal, A., **Sahoo, S.**, Peresan, A., **Khan, P.K.** and **Jana, N.**, *"Journal of Seismology"*, 29(2), 485-503, **2025**.
- Bera, A., Dutta, L., **Pal, S.K.**, Kumar, R., Shukla, P.K., Alkhuraiji, W.S., Durin, B. and Zhran, M., *"Water"*, 17(10), 1546, **2025**.
- Khan, A.** and **Agrawal, M.** *"Indian Geotechnical Journal"* 1-12, **2025**.
- Kiran, R., Saif, M., Wood, D.A., **Datta Gupta, S.**, Kumar, A., Upadhyay, R. and Rajak, V.K., *"ACS Omega"*, **2025**.
- S. Yasmin, **B. Chandra**. *"Physics of Fluids"*, 37, 074121, **2025**.
- M. Pisuwala, A. Maurya, **B. Chandra**. *"Physics of Fluids"*, 37, 044120, **2025**.
- V.S.S.D.M Vanaparthi, S. Kamaliny, P.P. Singh, **S. Sengupta**. *"Chemical Intermediates"*, 51, 3641, **2025**.
- A.K. Shastri, **S. K. Yatirajula**. *"Chemical Engineering Research and Design"*, 218, 328, **2025**.
- A.K. Shastri, **S.K. Yatirajula**. *"International Journal of Coal Preparation and Utilization"*, 1, **2025**.
- ShivShankar, **S.K. Bhaumik**. *"Journal of Environmental Chemical Engineering"*, 13, 117205, **2025**.
- S. Muskan, S. Somesh, P. Satypal, Y. Deepak, M. Murli Dhar, **A. Kumar**, T. Dhanesh, V.K. Dinesh. *"ACS Omega"*, **2025**.
- S. K. Pandit, K. Yadav, P. Chauhan, **A Kumar**. *"RSC Applied Interfaces"*, **2025**.
- P. Chauhan, **A. Kumar**. *"Food Chemistry"*, 145017, **2025**.
- S. Singh, M. Sahu, S. Prajapati, M. D. Mitra, **A Kumar**, A. K. Singh, D. K. Verma. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 718, 136857, **2025**.
- P. Kumari, **A Kumar**. *"Journal of Cultural Heritage"*, 73, 524, **2025**.
- N. Choudhary, Sajal, **P. Roy**. *"International Journal of Mechanical Sciences, Elsevier"*, 295, 110249, **2025**.
- A. Kishore, P. Choudhary, M. Parida, **A. Gupta**. *"Transportation Research Record"*, **2025**.
- P. Choudhary, M. Parida, **A. Gupta**. *"International Journal of Crashworthiness"*, **2025**.
- Y. Gurugubelli, P. V. Timbadiya, **B. Barman**. *"Stochastic Environmental Research and Risk Assessment"*, 1-19, **2025**.
- A. Mallikarjuna, D. Yadav, R. M. Oinam, D. R. Sahoo **R. Bhartiya**. *"Engineering Structures"*, 335, p.120397, **2025**.
- N. Mandal, P. Das, **K. Chanda**. *"Earth Syst. Sci. Data"*, 17, 2575-2604, **2025**.
- B. Sah, Sajal, N. Choudhary, K. Kumar, **P. Roy**. *"International Journal of Mechanical Sciences, Elsevier"*, 301, 110545, **2025**.
- K. Kumar, N. Choudhary, Sajal, B. Sah, **P. Roy**. *"Computer Methods in Applied Mechanics and Engineering, Elsevier"*, 444, 118169, **2025**.
- S. Kumar, L. Nainegali, **R. Sarkar**. *"European Journal of Environmental and Civil Engineering, Taylor & Francis"*, **2025**.
- N. Banik, **R. Sarkar**. *"Indian Geotechnical Journal, Springer"*, **2025**.
- P. Choudhary, M. Parida, **A. Gupta**. *"Transportation Research Part F: Psychology and Behaviour"*, 114, 794-820, **2025**.
- Subodh Shrivastava, Ashes Banerjee, Ashwin Singh, Mritunjay Kumar Singh, **S. Pasupuleti**. *"Powder Technology"*, 460, 121069, ISSN 0032-5910, **2025**.
- S. Shrivastava, V. N. Khatrri, A. Banerjee, **S. Pasupuleti**. *"Acta Geophysica"*, 1-16, **2025**.
- S. Tiwari, **S. Das**. *"Infrastruct. Geotech."*, 12, 171, **2025**.
- K. Kumar, N. Choudhary, Sajal, B. Sah, **P. Roy**. *"Computer Methods in Applied Mechanics and Engineering"*, 444, 118169, **2025**.

(b) Books:

- Abhishek Kumar, B. K. Maheshwari, (Eds.), **Rajib Sarkar**. "Springer Nature", ISBN: 978-981-96-1417-2, **2025**.
- B. K. Maheshwari, Abhishek Kumar (Eds.), **Rajib Sarkar**. "Springer Nature", ISBN: 978-981-96-1683-1, **2025**.
- M. Chaurasia, A. K. Pal, S. H. Islam and J. Pradhan, "ASCON-Based Mutual Authentication and Secure Surveillance Video Data Management in Smart Cities Using Blockchain," in *IEEE Transactions on Consumer Electronics*, Vol. 71, No. 2, 3029-3039, May **2025**,
- Pranay Kumar Saha, Anupam Trivedi, Dipti Srinivasan, Networks, Volume 43, **2025**, 101736, ISSN 2352-4677, 10.1016.
- M. K. Kumari, N. Tripathi, P. Joshi, "ProxaDyn: A Proximity-Aware Dynamic Caching Approach for Named Data Networks," in *IEEE Transactions on Network Science and Engineering*, Vol. 12, No. 3, 2360-2372, **2025**. (AUG25)
- M. Swain, N. Tripathi, and K. Sethi. "Identifying communication sequence anomalies to detect DoS attacks against MQTT." *Computers & Security* (**2025**): 104526.
- Derandomization via Symmetric Polytopes: Poly-time Factorization of Certain Sparse Polynomials P. Bisht, N. Saxena, *ACM Transactions on Computation Theory*, 17(2), **2025**
- M. Kumari, N. K. Singh, V. Kumar and M. Sahoo, "Design and investigation of charge plasma-based TMD heterojunction TFET biosensor for ultrasensitive detection", *Springer Nature Scientific Reports*, **2025**, Vol. 15:15195
- Bhawana Kumari, Dr. Manodipan Sahoo & Rohit Sharma, "ABCD parameter based analytical AC modeling of novel Cu-carbon hybrid interconnects for noise constrained nanoscale Nature, systems ", *Scientific Reports*, Springer, **2025**,
- Arti Kumari, Dr. Manodipan Sahoo, R. Thangavel, Somenath Roy, "First-Principles Investigation of Detection of Noble Metal-decorated Reduced Graphene Oxide for Ultrasensitive Methane", *Micro and Nanostructures*, Vol. 205, No. 208184, **2025**,
- Arti Kumari, Animesh Dubey, Dr. Manodipan Sahoo, R. Thangavel, "Eco-friendly synthesis and characterization of high quality reduced graphene oxide from dry coconut shells", *Materials Chemistry and Physics*, Elsevier publishers, Vol. 344, No. 131091, **2025**
- R. Rahul, A. Banerjee and J. Thangaraj, "Bayesian Regularized Neural Network based SPR Biosensor for Early Cancer Detection," *IEEE Sensors Journal*, *IEEE Sensors Journal*" (Volume: 25, Issue: 14, 15 July **2025**
- Aarti Dahiya, Sanjay Kumar, Shalu Rani, and Shaibal Mukherjee, "Progress, Perspectives, and Future Outlook of Yttrium Oxide-Based Memristive Devices for Data Storage, Multibit Programming, and Neuromorphic Computing: A Systematic Review" *ACS Applied Electronics Materials*, **2025**, (IF: 4.7).
- Sanjay Kumar, Shalu Rani, "Improved Performance of Yttrium Oxide-based Memristor through TiN Electrodes and Device Scaling for Neuromorphic and Pattern Recognition" *IEEE Transactions on Materials for Electron Devices*, **2025**.
- Sanjay Kumar, Deepika Yadav, Spyros Stathopoulos, Themis Prodromakis "Performance and variability analysis of ALD-grown wafer scale HfO₂ /Ta₂ O₅-based memristive devices for neuromorphic computing", *Frontiers in Nanotechnology-Nanodevices*, 7, 1621554, **2025**, (IF: 4.1).
- Shalu Rani, Gaurav Khandelwal, Abhinav Tandon, Sanjay Kumar, Akshaya Kumar Aliyana, Suresh C. Pillai, George K. Stylios, Nikolaj Gadegaard, Daniel M. Mulvihill, "Flexible and twistable ZnMn₂ O₄-electrodeposited yarn supercapacitors for wearable electronics" *ACS Applied Materials & Interfaces*, **2025**, (IF: 8.2).
- Shalu Rani, Gaurav Khandelwal, Abhinav Tandon, Sanjay Kumar, Akshaya Kumar Aliyana, Suresh C. Pillai, George K. Stylios, Nikolaj Gadegaard, Daniel M. Mulvihill, "Flexible and twistable ZnMn₂ O₄-electrodeposited yarn supercapacitors for wearable electronics" *ACS Applied Materials & Interfaces*, **2025**, (IF: 8.2).
- Vishal Kaushik, Swati Rajput, Ashavani Kumar, and Mukesh Kumar, "Efficient Photodetection via High Aspect Ratio Core-Shell Nanowire Array", *IEEE Transactions on Nanotechnology*, Accepted, June **2025**.
- Amit Kr. Pandey, Ravi Kumar Gangwar, And Raghvendra Kumar Chaudhary. A Compact Frog-Shaped Self-Diplexed MIMO Antenna With Sd-Hmsiw Technique For Wlan Applications, *Ieee Transactions On Antennas And Propagation*, Vol. 73, No. 6, June **2025**.
- V. Florinski, D. Balsara, D. Bhoirya, G.P. Zank, S. Biswas, S. Sharma and **Sethupathy S**, "The *Astrophysical Journal*", Vol. 985, No. 1, pp.1-10, **2025**.
- R. Kumari & **S. R. Samadder**. "Journal of *Environmental Management*", 389, 126243, **2025**.
- F Zakir, A. K. Syed, X Zhang, A. E. Davis, V. K. Sahu, A. E. Caballero, R. Biswal, P. B. Prangnell, S. Williams; "Additive Manufacturing" (**2025**).
- V. K. Sahu, S. Chandrakar, S. Jha, N. P. Gurao; "Materials Transactions" (**2025**)

- D. Sujith, Chandaswi Borra, Gaurav Kumar, Sarthak S. Singh, Olivier Lame, Kesavan Ravi, "Next Materials"8 (2025)
- Ritukesh Sharma, Dhiman Kumar Mahata, Amritendu Roy, Partha Sarathi De, Avanish Kumar: "Journal of Materials Engineering and Performance" (2025) Accepted.
- Vivek Kumar Sahu, HR Siller, MH Shen; "Additive Manufacturing Letters"(2025).
- M. H. Tyeb, Subhendu Mishra, and A. K. Majumder, Roping Hysteresis: A Novel Phenomenon Associated with Reverse Transition from Rope to Spray Discharge in Hydrocyclones, 2025, Taylor & Francis Group, mineral processing and extractive
- P. Kumari, A. Bhattacharjee, **G. K. Vishwakarma**, and F. Tank. Afthd.; "Japanese Journal of Statistics and Data Science", 1-31, 2025.
- A.P. Singh, **S.P. Tiwari** and I. Perfilieva. L-fuzzy transforms: "Soft Computing", 1-13, 2025.
- **J. Dasgupta**, C. Gangopadhyay, K. Kaveh, C. Manon. E "International Mathematics Research Notices", 2025.
- P. Kumari and **A. A. Selvan**. Sampling with derivatives in finitely generated shift-invariant spaces, "Journal of Computational and Applied Mathematics", 470, 2025.
- R. Ghosh and **A. A. Selvan**., "Advances in Computational Mathematics", 51, 2025.
- A. K. Murshid, **S. A. Sahu**, S. Mondal, and S. Das. –"Journal of Applied Mathematics and Mechanics", 2025.
- Ajay Bhandari, Kartika Chandra Tripathy, Sourav Choudhury, Prasanth Bokam, and Arnaud Germaneau, "International Journal of Heat and Mass Transfer" 251, 108706, 2025
- Pradeep Ambedkar, and Tanmay Dutta, Computational study of the performance of different gases in convergent-divergent type vortex tube, "Applied Thermal Engineering", 274, 126720, 2025.
- JP Varun, PK Mahato, , "Archive of Applied Mechanics"95 (6), 1-32, 2025
- Baij Nath Singh, Vinayak Ranjan, R. N. Hota. "Wave Motion", 138 (103577), 2025. Q2
- N. K. Jha, Vikram, N. K. Sah, R. N. Hota, "Acoustic Attenuation by Conical Cavity Backed Conical Liners with Simultaneous Bias-Grazing Flow", **Sadhana**, 50:50, 2025. Q2
- Madhu Ranjan Gunjan, Somen Kumar Dutta, **Deepak Kumar Mandal***;; "Physics of Fluids" (2025)
- Enhancing low-velocity impact resistance of basalt/epoxy laminates through MWCNT nanoparticle incorporation Hemant Priyadarshi & Kalyan Kumar Singh Published online: 21 Apr 2025, Composite Interfaces
- Kartika Chandra Tripathy, and Ajay Bhandari, Targeted drug delivery to the deviated regions of the human nasal cavities: An in silico investigation and in vitro validation, Computer Methods and Programs in Biomedicine, 264, 108706, 2025.
- **Guin, Sampa, and Tarun Kumar Naiya**. "Improvement of Flow Properties of Waxy Crude Oil through Pipeline Using Biodegradable Pour-Point Depressants Synthesized from Plant-Based Fatty Acid: Modeling and Application Studies." *SPEJ*. (2025)
- **S. Guin, T. K. Naiya**. Enhancement of cold flowability of waxy crude oil using ecofriendly PPDs synthesized from stearic acid and lauric acid – Experimental, modelling, and mechanistic approach, *Journal of Molecular Liquids* (2025)
- **Ghosh S., Kumar S., Chakravarty A., Hooker J.N.**, 2025. "Journal of the Geological Society of India"
- **Kumar V., Ghosh S.**, 2025. "Interpretation".
- **Saw, R. K., Bhadiyadra, C., Jangid, L. and Mandal, A.**, 2025. "Energy & Fuels". 39, 2025.
- **Ranjit Dutta, Ranvijay Singh, Rajib Chakraborty, Gaurav Kundu and Ajay Mandal.**, "Environmental Earth Sciences".
- **Kiran, R., Saif, M., Wood, D.A., Datta Gupta, S., Kumar, A., Upadhyay, R. and Rajak, V. K.**, 2025.. "ACS Omega".
- **Doley, A., Rajak, V.K., Kiran, R., Mahto, V., Upadhyay, R., Eswaran, U. and Yadav, P.**, 2025.. "Arabian Journal for Science and Engineering". 1–15.

Patents

Granted:

- A. K. Prasad, A. Vinod, S. Mishra, B. Purkait, S. Mukherjee, A. Shukla, N. Desinayak, B.C. Sarkar, A.K. Varma. Indian Patent No. 202531033924. Published April 11, 2025.
- Ashish Siddharth, Arun Dayal Udai, and **Prof. Ajay Bhandari**, Method and Equipment for Ocular Surgery and Drug Delivery (Filed). Application No: 202431060703.

Individual Faculty Achievements

- **Prof. A.K. Prasad** received “Springer Nature Editor of Distinction Award May 2025”
- **Prof. Akshay Guta** has been appointed as a Co-Chair, Special Interest Group H-5: Urban Transport in Developing Countries of World Conference on Transport Research Society (WCTRS). This international Society (WCTRS) provides a forum for the interchange of ideas among transport researchers, managers, policy makers, and educators from all over the world, from a multi-modal, multi-disciplinary, and multi-sectoral perspective.

New SIG cochairs (1/2)

SIG B5 (Freight Transport Modelling)

- Dr. Anna Pernestål
- Senior researcher, Director of Integrated Transport Research Lab, KTH Stockholm

SIG C1 (Traffic Flow and Network Modeling)

- Dr. Handong Yao
- Assistant Professor, School of Environmental, Civil, Agricultural and Mechanical Engineering, College of Engineering, University of Georgia, USA

SIG G6 (Transport and Health)

- Dr. Angela Curl
- Senior Lecturer, Department of Population Health, University of Otago Christchurch, New Zealand

SIG H5 (Urban Transport in Developing Countries)

- Dr. Akshay Gupta
- Assistant Professor, Indian Institute of Technology (ISM) Dhanbad, India



- **Prof. Dharavath Ramesh**, Associate Professor in the Department of Computer Science and Engineering, has been ranked among the top 0.5% of scholars worldwide in Computer Science in the 2024 ScholarGPS Global Rankings. This recognition highlights his outstanding research output, high citation impact, and continued contributions to the field. His position places him at #1,628 in Computer Science, #10,212 in Engineering and Computer Science, and #26,714 overall across all academic disciplines worldwide.
- **Prof. Vivek K. Sahu** successfully organized a two-day seminar on “Non-destructive testing, Powder metallurgy and Welding Technology” in the FMME Department
- **Prof. G. K. Vishwakarma** joined as a Co-editor for the Brazilian Journal of Biometrics.
- **Prof. T. Ojha** joined as a TPC member for IEEE LCN 2025 (Sydney, Australia), SmartGridComm 2025 (Toronto, Canada).
- **Prof. G. K. Vishwakarma** joined as an Associate Editor of “Journal of Statistical Computation and Simulation”.
- **Prof. Somnath Chattopadhyaya and Prof. Alok Kumar Das** attended the BIS Convention for Mechanical Engineers on 20-21 September 2024 at Goa and presented the activities related to BIS of IIT(ISM) Dhanbad. Only three out of 92 institutes (with whom BIS signed the MOU) were invited to present their cases.

- **Prof. Antarip Poddar** selected for the IGSTC Paired Early Career Fellowship in Applied Research (PECFAR) Call 2025. As part of this prestigious Indo-German collaborative program, he will be representing IIT (ISM) Dhanbad and partnering with Amirreza Aghakhani from the University of Stuttgart to pursue cutting-edge research in the field of intelligent microrobots for biomedical applications. This opportunity will help him to deepen his research in the field of “microswimmer locomotion” while fostering cross-border scientific exchange and innovation.
- **Prof. Somnath Chattopadhyaya** is selected as an Honorary Steering & Executive Committee (SEC) member of HERITAGE NETWORK. HERITAGE NETWORK is the first network between India and Europe for education and research cooperation in engineering sciences. HERITAGE Network is an international collaborative initiative focused on advancing ageing research. It aims to bring together experts, institutions, and policymakers to develop solutions that address the challenges and opportunities of ageing societies.
- **Prof. Shibayan Sarkar** delivered an expert lecture on “Indian Educational System and Scope of Internationalization in Higher Education” in the Summer Workshop organised by HERITAGE NETWORK in TU Dresden. **Prof. Shibayan Sarkar** is appointed as a SEC member (Indian Representative), HERITAGE NETWORK for the next 4 years. It is announced that the next General Assembly of Heritage Network will be held in IIT(ISM) Dhanbad in March 2026, to be organized by the Department of Mechanical Engineering.
- Further, another Heritage Network meeting is conducted regarding the progress of the organization of the upcoming GA in IIT(ISM) Dhanbad on 17.06.2025 with **Prof. Vimal Kumar Srivastava**, Dean, International Relations, IIT Roorkee, Vice President, HERITAGE NETWORK.





Fig. Speech delivered by Prof. S. Chattopadhyaya and Prof. S. Sarkar in the HERITAGE NETWORK meeting at TU Dresden, Germany, to propose and convince 10 European countries' members (Estonia, France, Germany, Greece, Ireland, Italy, Poland, Portugal, Spain, Sweden) and 15 Indian Institutions' members (IITs, NITs, IIITs, State Universities) for conducting the next General Assembly in IIT(ISM) Dhanbad, INDIA.



Fig. In a meeting of the HERITAGE NETWORK members at IIT(ISM) Dhanbad

- **Prof. Ajit Kumar** has been inducted as a **Chartered Engineer (India)** by the **Institution of Engineers (India)**. Additionally, he has been elevated to the status of **Member of the Institution of Engineers (India)** with the membership ID M-1821908.
- **Prof. Ajit Kumar** from the Department of Mechanical Engineering was invited to serve as a **Session Chair** at the **Fluid Power Technical Seminar (FPTS)**, organized by the **Fluid Power Society of India (FPSI)**. Held on **19–20th June 2025** in **Bangalore**, the two-day event brought

together a distinguished gathering of experts from **global fluid power associations**, along with **renowned speakers from industry and academia**. The seminar featured insightful technical paper presentations and facilitated meaningful discussions on the latest innovations in fluid power technology. Prof. Kumar's involvement as a Session Chair highlights the department's growing engagement in national and international technical platforms and underscores our continued contributions to advancing engineering excellence.



- **Prof. Keka Ojha** has been honoured with the **2025 SPE Regional Technical Award in Reservoir Description and Dynamics** for the South Asia and Pacific Region. The award will be presented at the **Asia Pacific Oil and Gas Conference and Exhibition (APOGCE)** on **14 October 2025** in **Jakarta, Indonesia**.
- **Prof. Tarun Kumar Naiya** has been honoured with the **2025 SPE Regional Technical Award in Production and Operations** for the South Asia and Pacific Region. The award will be presented at the **Asia Pacific Oil and Gas Conference and Exhibition (APOGCE)** on **14 October 2025** in **Jakarta, Indonesia**.
- **Prof. Tarun Kumar Naiya** delivered an **Invited Talk** in the International Seminar on "**Chemistry for a Better Tomorrow**" organized by **Indian Chemical Society, Bhagalpur Chapter** and **T.M.**

Bhagalpur University, Bhagalpur, held on May 9–10, 2025.

Prof. Neetish Kumar Maurya and Prof. Sayantan Ghosh are serving as instructors for the NPTEL course “Petroleum Formation Evaluation”, a 12-week national-level program covering advanced well logging techniques, interpretation methods, and software-based learning. Their selection reflects recognition of their technical expertise and commitment to high-quality petroleum engineering education.

Prof. Ajay Mandal delivered a lecture on “Exploring Carbon Capture and Storage: Insights into CO₂ EOR and Carbonated Water Injection” on 12th May, 2025, at Monash University, Malaysia

Major Research Output

• Research of the Quarter in the department

Statistical method is applied with nearest neighbour declustering and network analysis to understand the background seismicity of Southern California region. A Hybrid Approach is used for Assessing Aquifer Health Using the SWAT Model, Tree-Based Classification, and Deep Learning Algorithms. Deterministic Seismic Hazard Assessment is employed for the area of the Chhotanagpur Plateau, India. Geological Hydrogen Prospectivity of Iron Ore Deposits in India Based on Semiquantitative Analysis is conducted.

- A research study conducted by Prof. Antarip Poddar This study finds that higher hematocrit (Hct) levels shorten recirculation zones behind stenoses, stabilize vortices, and increase wall shear stress (WSS), raising the risk of plaque rupture in diabetes but reducing oscillatory shear index (OSI) and

MoUs Signed

The University of Akron (UA) and the Indian Institute of Technology (Indian School of Mines) Dhanbad (IIT(ISM)) have entered into a Memorandum of Understanding (MoU) aimed at enhancing academic collaboration and fostering innovation in conventional and *Advanced Manufacturing, Precision*.

Women Faculty Achievers

• **Dr. Piyali Sengupta** has joined the technical committees of IRC 11: B-1 for General Design Features (Bridges and Grade Separated Structures) and IRC 11: B-4 for Concrete (Plain, Reinforced and Pre-Stressed) Structures.

• **Prof. Kasturi Sala** was honored to be a part of the India Concrete Congress Conference, held on 17th April, **2025** at Biswa Bangla Exhibition Centre, Kolkata, Organized by Brand Image Integrated Solutions and Indian Institute of Metals (IIM), Kolkata in association with Indian Concrete Institute (Kolkata Centre).

• **Prof. A. Sengupta** was an expert member in the selection committee for CSIR-CIMFR project position in June **2025**.

• **Prof. Keka Ojha** has been honoured with the **2025 SPE Regional Technical Award in Reservoir Description and Dynamics** for the South Asia and Pacific Region. The award will be presented at the **Asia Pacific Oil and Gas Conference and Exhibition (APOGCE)** on **14 October 2025** in **Jakarta, Indonesia**.

International Visits

- Saheli Ghosh Dastidar, Shyamolima Banerjee, & Megha Chowdhury, Ph.D scholars of department presented their research at “EGU General Assembly-2025” held at Vienna, Austria during April 27 to May 2, 2025.



- Prof. Sagar Pal**, Department of Chemistry & Chemical Biology visited University of Siegen, Germany as Visiting Professor in the Department of Chemistry & Biology in the month of May 2025. Prof. Pal also Delivered an Invited Talk on “a special Physical Chemistry and Cu colloquium” on 27 May, 2025 at University of Siegen, Germany.



- Prof. Ajay Bhandari** visited Indiana University Bloomington, USA, as a guest researcher, where he had the opportunity to collaborate closely with faculty members specializing in ocular drug delivery, optical fiber-based fluorometry, and corneal transplantation. The visit enabled meaningful academic exchange, access to state-of-the-art laboratory facilities, and participation in the ARVO 2025 (Association for Research in Vision and Ophthalmology) Annual Meeting. During the visit, Prof. Bhandari delivered a talk titled “Computational Analysis of the Corneal Endothelial Microenvironment During Cold

Storage: Impact of Mixing Conditions,” highlighting his research in the field.



- Abhay Kumar, Sangeeta Koner (Ph.D Scholars) with MSc-Tech students (Ashutosh Kumar, Naman Nagabanshi, Rajiv Kumar Gope, & Ratikanta Behera) participated in the Summer Schools program during 16-29 June 2025 held at St. Petersburg Mining University (Empress Catherine II), Russia under the Indo-Russian Collaboration.



- Prof. Anil Pahwa, University Distinguished Professor, Kansas State University, U.S.A., visited IIT (ISM) Dhanbad for a GIAN course on “**Operation and Control of Distribution Systems with Renewable Energy Sources**” held during 16-20 June 2025.

Workshop / Conference / Seminar

- **Workshop/conference/seminar in the department:**

- Prof. S. Singh delivered a Keynote lecture on “Gold metallogeny of the North Singhbhum Mobile belt: An insight through Nanogeoscience” in the one-day seminar on “Advances in geology and Geo resources with special emphasis on Jharkhand” organized by St. Xavier's College, Ranchi on April 05, 2025
- Prof. S. Singh delivered a Keynote lecture on the topic titled “Nanogeoscience in Critical Minerals Exploration: Challenges and Opportunities in India” in the one-day workshop on “Unlocking India's Critical Minerals for sustainable Future: Facilitating exploration and proposal Development” organized by the Department of Mines and Geology (DGM), Raipur, Chhattisgarh on June 25, 2025
- The **Department of Applied Geophysics, IIT (ISM) Dhanbad**, hosted a **GIAN course on “Inverse Methods and Machine Learning: Applications in Geosciences”**, led by **Prof. Saumen Maiti**, with advanced hands-on sessions conducted by **Prof. Mrinal Sen**, Chair Holder of the **Morgan Davis Centennial Chair in Petroleum Geology**, The University of Texas at Austin. The programme covered advanced **inverse theory**, including **optimization techniques**, **Bayesian frameworks**, and **artificial intelligence methodologies** such as **convolutional neural networks (CNNs)**, **generative adversarial networks (GANs)**, and **physics-informed learning**, complemented by practical sessions on **seismic inversion**, **gravity and geoelectrical interpretation**, **lithology clustering**, and **basement depth estimation**. The **inaugural and valedictory sessions** were attended by the **Director, Deputy Director, and Dean of IIT (ISM) Dhanbad**, and the course attracted participants from **academia and industry**, providing a high-level platform for disseminating and discussing state-of-the-

art applications of **machine learning and inverse methods in geosciences**.



The Department of Civil Engineering, IIT (ISM) Dhanbad, organized a three-day workshop on “Technological Advances in Hydrodynamic Modelling & Measurement: Application in Flood & Stream Flow Studies”. Dr. Bandita Barman was the organizing secretary of the workshop. Prof. Sukumar Mishra, the director of IIT (ISM) Dhanbad inaugurated the workshop. The workshop sessions featured experts Mr. Rishi DS (TUFLOW), Prof. Arup Kumar Sarma (IIT Guwahati), Dr. Anurag Sharma (NIT Rourkela), Dr. P V Timbadiya (SVNIT Surat), Dr. Tinesh Pathania (IIT (ISM) Dhanbad), and Dr. Manish Pandey (IIT Kharagpur). It was a great opportunity for students and

participants to explore flood simulation, hydrodynamics modelling, and measurement techniques through hands-on training and expert lectures.



- The Department of Civil Engineering at IIT (ISM) Dhanbad, in collaboration with the Anusandan National Research Foundation, organized a two-day national seminar titled *“Water Nexus 2025: Bridging Surface and Ground Water Resources – Utilization and Management”* on May 16–17.



The event was held at the Sir M. Visvesvaraya Seminar Hall within the Department of Civil Engineering and brought together

distinguished researchers, academics, policymakers, and professionals from across the country. Participants engaged in in-depth discussions on various aspects of integrated water resource management, including policy, governance, river restoration, and advancements in hydrological modeling.



Prof. Sukumar Mishra, Director of IIT (ISM), delivered the inaugural address, emphasizing the importance of aligning local and global perspectives in water resource governance. He also appreciated the Department of Civil Engineering for hosting a seminar on such a vital and timely theme.



- A three-day State-Level Training of Trainers (ToT) program on “Road Safety and Transport-Related Hazards and Their Mitigation” was organized on 20th May- 22nd May, 2025 by the District Disaster Management Authority (DDMA), Kangra, Dharamshala, Himachal Pradesh. Prof. Akshay Gupta served as a resource person, delivering expert insights on road safety challenges in hilly terrains and construction zones, as well as the role of technological advancements in enhancing road safety in three-days lecture series. The talks consist of the following: Talk 1: Hill Road Safety: Design Considerations and Safety Measures, Talk 2: Construction Zone Road Safety, Talk 3: Smart Technologies for Safe Transportation Infrastructures.

Photonic Integrated Circuits (PIC) and Their Fabrication Strategies" in June 2025. The workshop covered key areas such as the basics of PICs, an introduction to Ansys Lumerical for PIC simulation, modeling of various common PICs and fabrication strategies for PICs.



The event was coordinated by Prof. Mrinal Sen (Coordinator) and Prof. Mukul Kumar Das (Co-coordinator), aimed to provide participants with hands-on experience and foundational knowledge in the rapidly growing field of photonic integration.



पंजाब क़ेसरी WED, 21 MAY 2025 EDITION: KANGRA KESARI, PAGE NO. 2

सड़क सुरक्षा पर तीन दिवसीय प्रशिक्षण कार्यक्रम का शुभारंभ

धर्मशाला, 20 मई (ब्यूरो) : ए.डी.एम. शिल्पी बेक्टा ने चेलियां में सड़क सुरक्षा व परिवहन खतरों पर आधारित तीन दिवसीय प्रशिक्षण कार्यक्रम का शुभारंभ किया। उन्होंने कहा कि देश में हर साल करीब डेढ़ लाख लोगों की सड़क दुर्घटना में मौत होती है, जिनमें अधिकांश 18-45 आयु वर्ग के होते हैं। उन्होंने दुर्घटना संभावित स्थलों पर साइन बोर्ड लगाने पर बल दिया। पहले दिन आई.आई.टी. रोड्ड के प्रोफेसर डा. सूर्यकांत सहदेव, आई.आई.टी. (आई.एस.एम.) के डा. अक्षय गुप्ता और आई.आई.टी. रुड़की के डा. कालीप्रसन्न मुद्गली ने विभिन्न विषयों पर प्रस्तुति दी। कार्यक्रम का संचालन राविन कुमार और कुलदीप सिंह ने किया। राविन कुमार ने बताया कि यह प्रशिक्षण प्रमुख विभागों और स्वयंसेवकों के बीच सड़क सुरक्षा के प्रति जागरूकता व तैयारी को बढ़ाने के उद्देश्य से आयोजित किया गया है।

धर्मशाला : चेलियां में सड़क सुरक्षा एवं परिवहन से संबंधित खतरों और उनके निवारण पर केंद्रित तीन दिवसीय प्रशिक्षण कार्यक्रम के शुभारंभ के दौरान ए.डी.एम. शिल्पी बेक्टा व अन्य सामूहिक चित्र में। (ब्यूरो)

- Prof. Rajib Sarkar delivered online lecture on “Earthquake-Resistant Design Considerations for Pile-Supported Structures with focus on Tall Building Foundations” for Captain Steel, 30th June 2025.
- The Department of Electronics Engineering, IIT (ISM) Dhanbad, organized a 2-day workshop titled "Lumerical Simulation of

- The Department of Electronics Engineering, IIT (ISM) Dhanbad, successfully conducted a

prestigious GIAN (Global Initiative of Academic Networks) course on “Memristor and its Application in Neuromorphic Computations” from June 23 to June 27, **2025**. The program brought together experts, scholars, and enthusiasts to explore the intersection of emerging memory technologies and brain-inspired computing.



The course was inaugurated on June 23 by Prof. Sukumar Mishra, Hon'ble Director, IIT (ISM), who highlighted the growing importance of neuromorphic engineering and the transformative potential of memristive devices in the design of future computational systems.



A major highlight of the course was the series of lectures delivered by Prof. Sung-Mo (Steve) Kang, a globally renowned authority in VLSI and neuromorphic systems and former Chancellor of the University of California, Merced. Prof. Kang delivered insightful lectures across multiple days, covering topics from fundamentals of memristors to their integration in neuromorphic computing architectures.

- The Electronics Engineering Department IIT (ISM) Dhanbad, recently conducted a Drone Bootcamp (18–22 June **2025**) under the MeitY-funded project “Capacity Building for Human Resource Development in Unmanned Aircraft Systems.” Over 120 students from six different states across India participated. They represented institutions such as IIT Patna, NIT Durgapur, NSUT Delhi, BIT Mesra, BIT Sindri, Manipal University, UCET Hazaribagh, IEM Kolkata, Gaya Engineering College, GEC Jamui, IIT (ISM) Dhanbad and more.



Participants assembled, programmed and flight-tested 20 drones (8 hexacopters and 12 quadcopters), gaining hands-on experience in UAV fundamentals, aerodynamics, sensors, GPS, antenna design, communication systems, image processing, machine learning, control systems and embedded systems.

- Prof. Dushyant Sharma, The Department of Electrical Engineering, IIT (ISM) Dhanbad, organized a 5-day GIAN course on “Operation and Control of Distribution Systems with Renewable Energy Sources” during 16-20 June **2025**.



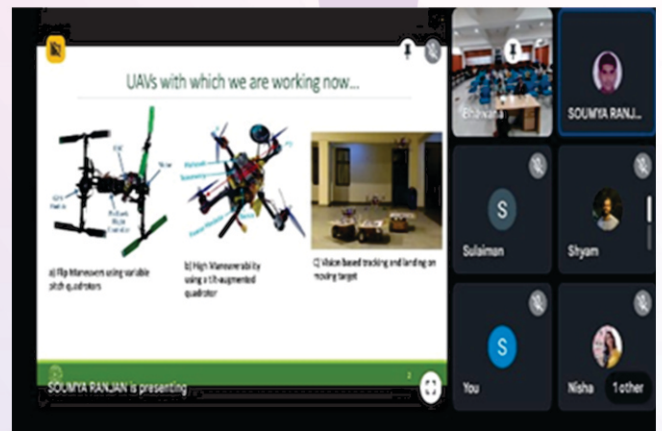
- Prof. Dushyant Sharma, Assistant Professor, Department of Electrical Engineering, was the coordinator of the course, while Prof. Anil Pahwa, University Distinguished Professor, Kansas State University, U.S.A., was the foreign expert in the course. The course was attended by participants from different institutes across the country. The inaugural function was held on 16th June. Prof. Dheeraj Kumar, Deputy Director, IIT (ISM) Dhanbad, graced the inaugural session with his presence, while Prof. Sukumar Mishra, Director, IIT (ISM) Dhanbad, and Prof. Suparna Kar Chowdhury, Chairperson, IEEE Kolkata section, joined online.



During the 5-day event, Prof. Anil Pahwa and Prof. Dushyant Sharma delivered lectures for 12 hours and tutorials for 2 hours, giving new insights into electric power distribution systems. Prof. Anil Pahwa also conducted an interaction session with the faculty members and students of the department to discuss various collaboration opportunities. A site visit to an electrical sub-station was also arranged for the participants on the last day. The program was deeply appreciated by the participants. An examination was

conducted on the last day, which every candidate passed, marking the program a success.

- Dr. Bhawana Singh and Dr. Shyam A. B. organised a two-day Centenary Webinar on Embracing Control Theory in Modern Real-World in the Department of Electrical Engineering, Indian Institute of Technology (ISM) Dhanbad, India, on 28-29 May 2025.
- There were four eminent speakers from IITs and IISc who discussed the modern control theory for real-world applications through their detailed presentations. This webinar was a part of the centenary celebration at IIT ISM Dhanbad, marking its establishment as a 100-year-old institution.



Control systems facilitate tasks that were previously reliant on human intervention, allowing for greater adaptability, consistent performance, and optimized operation. The theme of this webinar is dedicated to the practical applications of control theory in the real world such as robotic systems, unmanned aerial vehicles, and multi-agent systems. In this webinar lecture series, participants were M. Tech and PhD students from IIT ISM Dhanbad, and others were research scholars and faculties from other institutions working in several research areas of Electrical Engineering.

- The Department of Civil Engineering, IIT (ISM) Dhanbad, successfully hosted a five-day GIAN course from June 23–27, 2025, under the Ministry of Education's Global Initiative of Academic Networks (GIAN) scheme. The course focused on the pressing challenges and best practices surrounding the safe design,

operation, and closure of Tailings Storage Facilities (TSFs), a critical concern in modern mining operations.



This course was organised by Prof. Sarat Kumar Das of IIT (ISM) and Dr. Bibhuti Bhusan Panda, a Senior Geotechnical Engineer at AECOM, USA, joined as a foreign expert. The course featured in-depth lectures, tutorials, and hands-on training. Participants explored a wide range of topics including tailings disposal methods, hydro-geotechnical parameters, seismic and filter design, instrumentation like InSAR, and global standards such as GISTM.



With strong participation from industry professional, students, faculty, and regulatory bodies, the course fostered meaningful dialogue between academia and practice. Attendees gained insights into advanced monitoring technologies, sustainable design, and regulatory frameworks that ensure long-term safety and environmental compliance of TSFs. This course not only enriched technical knowledge but also strengthened international collaboration in the field of geo-environmental engineering.

- Prof. Leena Vachhani, Systems and Control, IIT Bombay, discussed the motion planning and collision avoidance of mobile robots in unknown environments. The controller implementation, along with the video excerpts of different experiments, were discussed. Dr. Kiran Kumari, Electrical Engineering, IISc Bengaluru, gave a lecture on applications of sliding mode control to aerial and ground robotics, showcasing various experimental results. Dr. Soumya Ranjan Sahoo, Electrical Engineering, IIT Kanpur discussed control applications to Tilt Augmented Quadcopter with rigorous outdoor experiments.

Dr. Shyam Kamal, Electrical Engineering, IIT BHU, Varanasi, delivered a talk on the application of sliding mode control for power converters. Participants learnt a lot from the detailed visualization of theoretical concepts through rigorous experimental results and gave feedback to host similar events in the future.



- **Prof. Vivek K. Sahu** successfully organized a two-day seminar on “Non-destructive testing, Powder metallurgy and Welding Technology” in the FMME Department. The event featured an engaging talk by Mr. Manvendra Singh, Scientist-E and Director at the Bureau of Indian Standards (BIS), who shared valuable insights on the latest BIS standardization techniques related to the seminar topics. The session was highly interactive, and the audience greatly benefited from the practical knowledge and in-depth discussions.
- **National Conference on Data Predictive Analytics & Numerical Simulations** during

April 23-25, 2025

Data predictive analytics and numerical simulations are two cutting-edge methodologies that play a pivotal role in modern decision-making and problem-solving across various industries. The National Conference on Data Predictive analytics and Numerical Simulations aims to bring together leading academic scientists, researchers, and research scholars to exchange and share their experience and ideas in the field. Also, it aims to serve as a platform for exploring new trends in data predictive analysis and foster collaborations and networking among the researchers working in the area.

- **Departmental Centenary Talk Series**

Prof. Aryan Kaushik, Associate Professor, Manchester Met, UK presented the 3rd Lecture of Centenary Talk Series (online) organized by the Department of Mathematics and Computing. Prof. Kaushik discussed the evolution toward IMT-2030/6G, covering key trends, challenges, standardization efforts, spectrum opportunities, and emerging use cases. He focused on the role of Integrated Sensing and Communications (ISAC) in enabling integrated 6G services, highlighting its synergy with ubiquitous intelligence, non-terrestrial networks, and applications in public safety and robotics. The talk was held in online mode.

- **National Statistics Day**

The Department of Mathematics and Computing at IIT (ISM) Dhanbad proudly celebrated **National Statistics Day** on June 29, 2025, commemorating the birth anniversary of **Prof. Prasanta Chandra Mahalanobis**, the Father of Indian Statistics. The event was graced by Prof. Dheeraj Kumar, Deputy Director of IIT (ISM) Dhanbad, as the Chief Guest. Distinguished talks were delivered by eminent statisticians: **Prof. Ashis Chakraborty**, retired Professor from the Indian Statistical Institute, Kolkata, who spoke on "Some Recent Developments in Software Reliability," and **Prof. Debasis Kundu**, Professor at IIT Kanpur, who presented his insights on "Robust Parameter Estimation of Newton's Rings."

- A five-day Workshop on Dynamics, Vibration, Acoustics, and Control in Industrial Applications was conducted by Prof. Aman Kumar (Coordinator), Prof. R. N. Hota (Co-Coordinator), and Prof. Sanjoy Ghoshal (Co-Coordinator). Top scientists

from different DRDO Labs and students from various academic Institutions attended the workshop.



- An Executive Development Program titled "Mining Equipment Health and Safety Practices" was successfully conducted from **21st to 23rd May 2025** by the **Department of Mechanical Engineering, IIT (ISM) Dhanbad**. The coordinator of the training program was **Prof. Ajit Kumar**, and the co-coordinator was **Prof. Niranjana Kumar**.

The three-day training witnessed enthusiastic participation from **mid to senior-level executives** representing various **mining and construction industries** from across the country. The program aimed to enhance awareness and impart practical knowledge on the latest safety protocols, equipment maintenance strategies, and best practices in mining operations. The event provided a valuable platform for industry-academia interaction and reinforced the institute's commitment to advancing professional development in the mining sector.





- The Department of Mechanical Engineering, IIT (ISM) Dhanbad, successfully started the AICTE-QIP PG Certificate Program of 24 weeks on "Robotics and 3D Printing" from 23rd June to 24th December **2025**, under the Quality Improvement Program (QIP) scheme of AICTE.
- The inaugural function was held on 23rd June **2025**, graced by Prof. M. K. Singh, Dean (Academic), and Prof. Somanth Chattopadhyaya, Head of the Department, along with faculty coordinators Prof. Amit Rai Dixit and Prof. Alok Kumar Das. The event witnessed enthusiastic participation from faculty members of AICTE-approved engineering institutions across the country.
- This 24-week intensive course offers a balanced blend of theoretical instruction, hands-on laboratory sessions, simulation training, and industry-focused insights in key areas such as robotics, additive manufacturing, and industrial automation. The program is designed to empower faculty members with practical knowledge and pedagogical tools aligned with modern manufacturing technologies.



Notably, this is the second consecutive year that the Department has been awarded this prestigious program by AICTE. The

department had successfully completed the same course during the 2024-25 academic session, receiving highly positive feedback from participants and stakeholders. This initiative once again reaffirms the department's commitment to capacity building, interdisciplinary research, and bridging the academia-industry gap in the domain of advanced manufacturing.



Kalyan Kumar Singh@The LaLiT Ashok Bangalore Dated 8th April 2025.



@ BIT Sindri on 7th May 2025

The Department of Petroleum Engineering organized a one-day workshop on NBA Accreditation under the guidance of Chief Coordinators and Professors-in-charge of AICTE Sponsored Activities, Prof. Vikas Mahto, on 8th May 2025.

