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R&D Newsletter

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

Vol. 6, July-September, 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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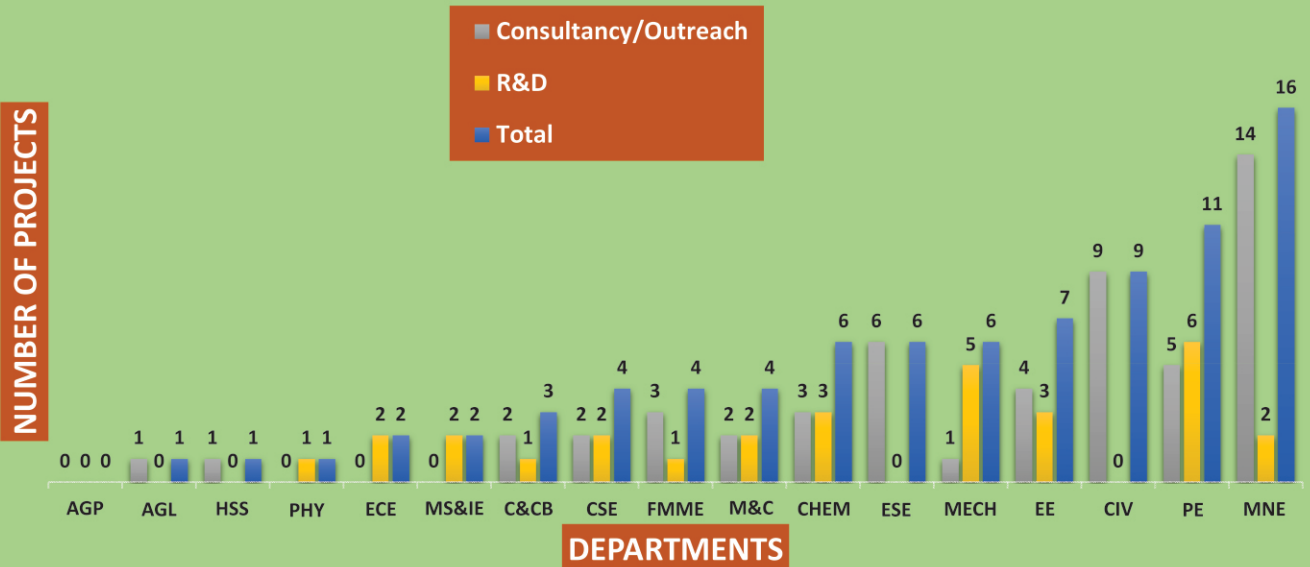
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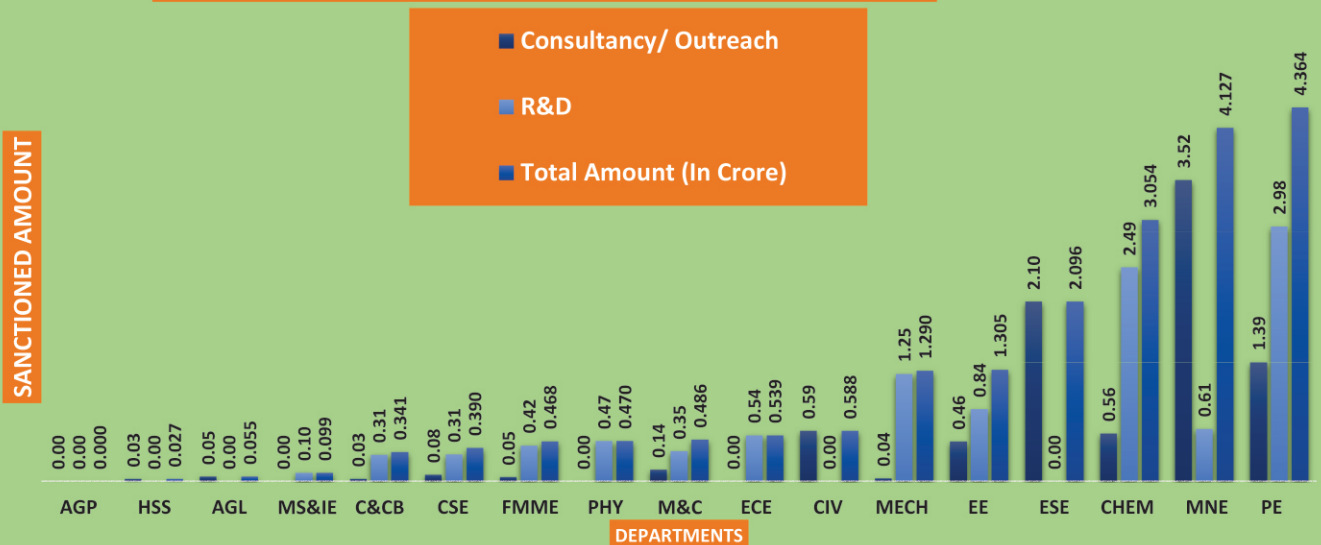


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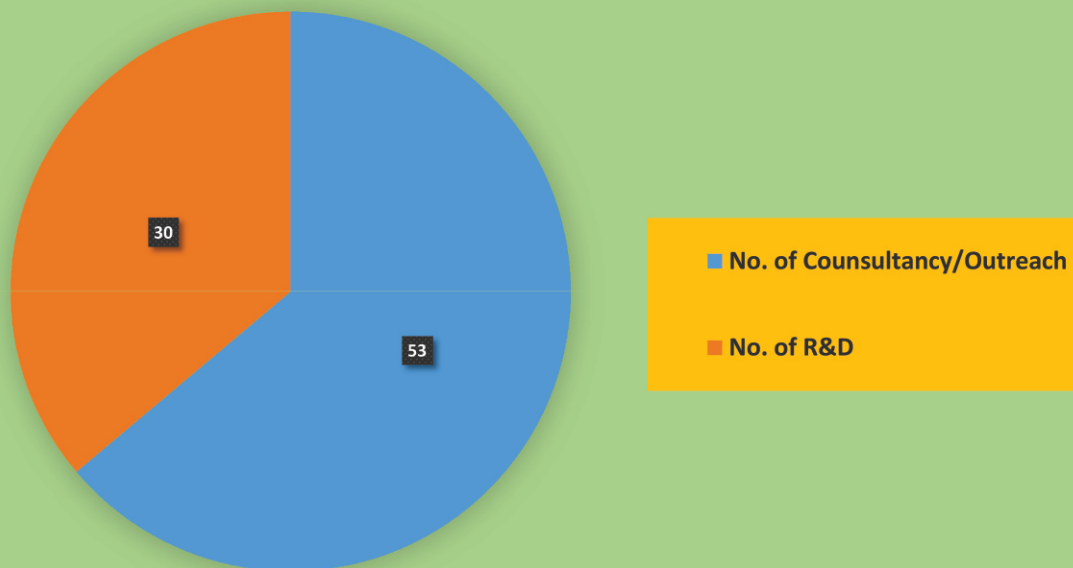
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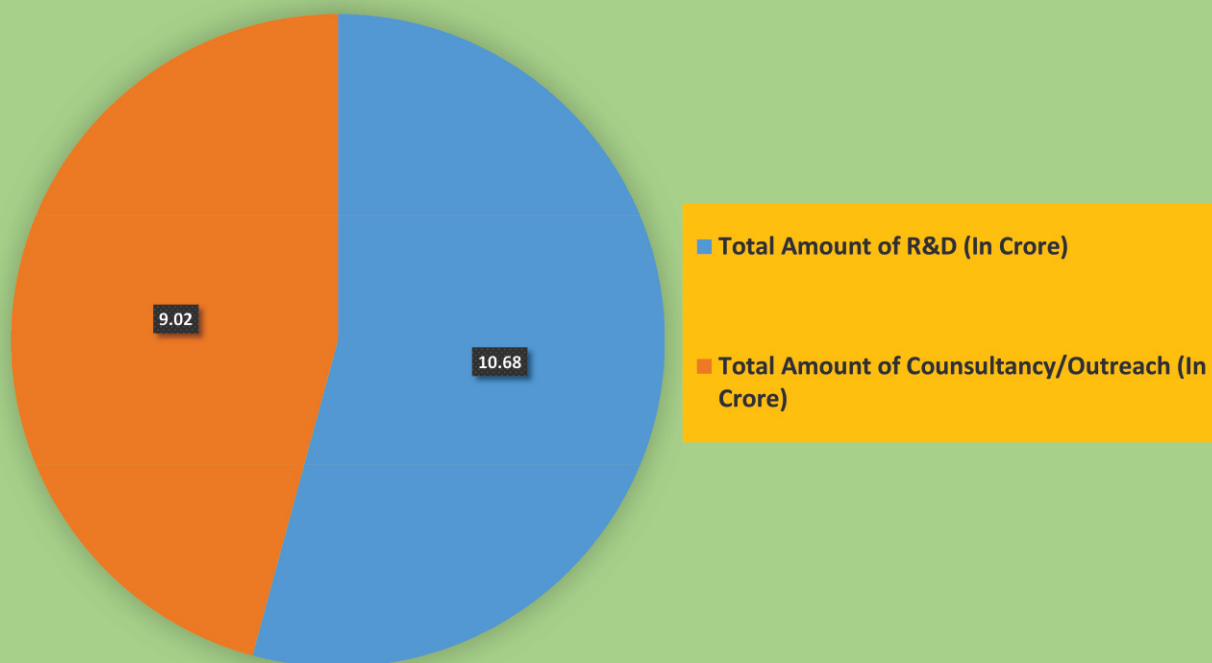
Sanctioned Amount (In Crore) of R&D Projects, Consultancy/Outreach Activities (Jul-Sep, 2025)



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



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



Publications

Total No. of Publications : 249

Selected Publications

- A.K. Padhi, M.K. Mukherjee, B.S. Bisht, B. Saravanan. "American Mineralogist", 2025.
- M. Chowdhury, K. Sarkar, B. Hazra, F. Sadeghpour, M. Panda, V. Vishal, M. Ostadhassan. "Energy & Fuels", 39(33), 2025.
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- M. Mazumder, A. Tripathy, A. Bal, S. Liu, T.N. Singh, Z. Pan. Fuel, 405, 136414, 2025.
- L. Roy, A.K. Ghosh, A.K. Bhaumik. Deep Sea Research Part II: "Topical Studies in Oceanography", 2025.
- R. Mukherjee, A.S. Venkatesh. "Journal of Earth System Science", 2025.
- S. Srivastava, V. Vikash, S.K. Pal, R. Kumar, S. Kumar, S. Mondal, A.K. Bhaumik. Mining, "Metallurgy & Exploration", 2025.
- P. Kumar, A. Das, S. Singh, S. Pal, S. Chatterjee, A.K. Kujur. "Ore Geology Reviews", 180, 106580, 2025.
- S. Roy, A.S. Venkatesh. "International Journal of Coal Preparation and Utilization", 2025.
- P. Kumar, S. Pal, S. Ranjan, P. Narayan, V. Singh, S. Layek, A. Das, S. Singh. "Journal of the Geological Society of India", 101(7), 2025.
- A. Goswami, S.P. Mohanty, S. Sarangi, S. Das, D. Mohanty, A. Barik. "International Journal of Earth Sciences" (2025).
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- Khan, A., Gupta, R.K. and Agrawal, M "Journal of Earthquake and Tsunami", 2550022. 2025
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- S. Tiwary, S.K. Bhaumik. "Advanced Powder Technology", 36, 105014, 2025.
- D. R. Rout, A. Kumar, S. Rtimi. "Journal of Materials Chemistry A", 2025.
- R. Kumar, D. Mahato, S.K. Mishra, A. Kumar, S. Jayapalan. "Polymer Composites", 2025.
- F. A. Ansari, A. Pani, S. Oh, S. S. Mohapatra. "International Journal of Injury Control and Safety Promotion", 1-14, 2025.
- S. K. Sahu, S. C. Dutta. "International Journal of Mechanical Sciences", 110638, 2025.
- D. Jain, S. D. Adhikary. "Construction and Building Materials Journal, Elsevier", 143204, 2025.
- Jha, V. Kumar, S. C. Dutta. "Journal of Building Engineering", 2025.
- P. N. Mishra, H. Verma, S. Tiwari, S. Q. Olaya, T. Bore, Z. Zhao, and S. K. Das. "American Society of Civil Engineers", 151 (11): 06025005, 2025.
- R. Abhishek, J. S. Vinod, S. Chawla. "Indian Geotechnical Journal", 2025.
- B. Dey, Sajal, P. Roy. "Thin-Walled Structures, Elsevier", 113890, 2025.
- S. Kumar, A. Anand, L. Nainegali, R. Sarkar. "Int. J. of Geosynth. and Ground Eng". 11, 54, 2025.
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- A. Kumar, B. K. Maheshwari, R. Sarkar [Eds.]. "Springer Nature", 2025.
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- M. K. Kumari, N. Tripathi, P. Joshi, "ProxaDyn: A Proximity "IEEE Transactions on Network Science and Engineering", Vol. 12, No. 3, pp. 2360-2372, 2025.
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- V. R. Shirodkar, D. R. Edla, A. Kumari, and R. Dharavath, "Journal of Neuroscience Methods", Vol. 424, 110565, 2025.
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- N. V. Kalpage, Y. Hong and P. Priya, Performance Analysis and Joint Receiver Design for an OTFS-Based ISAC System in Time-Varying Channels,

- "IEEE Transactions on Vehicular Technology", August **2025**.
- Ritesh Kumar, Pankaj Kumar Singh, Sanjeev Kumar Raghuwanshi, Santosh Kumar "IEEE Sensors Review", September **2025**.
 - Shashank Singh, Saptarshi Neogi, Ishita Visen and Manodipan Sahoo, "Physica Scripta", IOP Publishers, September **2025**
 - P. Kumar, R. K. Ranjan and S. -M. Kang, "in IEEE Transactions on Nanotechnology", vol. 24, pp. 462-468, **2025**.
 - D. Mishra, **A. Baral** and S. Chakravorti, "IEEE Transactions on Plasma Science", Vol. 53, No. 2, 1896-1903, **2025**.
 - K. Ansari, M. S. Tanweer, D. Kumar, and **S. R. Samadder**. "Separation and Purification Technology", 134661, **2025**
 - Prof. Vivek's journal publication: V. K. Sahu, M. Yadava, P. Chakraborty, N. P. Gurao, MicroMechanisms of Damage Evolution in Commercially Pure Titanium: An In-Situ Study with CPFEM Simulations, Metall. Mater. Trans. A. (**2025**).
 - Prof. Avanish Kumar's journal publication: Bhawesh Chhajed, Sudharm Rathore, Avanish Kumar, Aparna Singh: European Conference on Fracture 2024, "Procedia Structural Integrity", 68 (**2025**), 708-714.
 - Haque, Z., & Jain, P. K. (**2025**). "The Canadian Journal of Metallurgy and Materials Science", Published online: 02 Sep **2025**.
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 - Girendra Kumar, Avanish Kumar, Himadri Nandan Bar. "Journal of Materials Engineering and Performance" (**2025**).
 - S. Bajpai, A. Sameer, R. Fatima. "Journal of Media Ethics", **2025**, 1-15.
 - **H. K. Mishra**, Equality in symplectic eigenvalue inequalities. "Linear Algebra and its Applications", August **2025**.
 - T. De, A. Dan, R. Ramachandran, **A. Das.**, "Powder Technology", 467, 121507, Aug **2025**.
 - U. Goswami, **S. Mondal**, "Applied Mathematical Modelling", 150, Part B, 116371, **2026**.
 - **G. K. Vishwakarma**, H. P. Singh, H. Joshi, and N. Kumar. "Journal of Computational and Applied Mathematics", 117027, **2025**.
 - N. Kumar, T. Majumdar, **G. K. Vishwakarma**, and A. Bhattacharjee. "International Journal of Biomathematics", **2025**.
 - **P. K. Kewat**, V. Tiwari. "Quantum Information Processing", 24, 270 **2025**.
 - **R.B. Kaligatla**, P. Panja, B.N. Mandal. "The ANZIAM Journal", 67, e32, 1-22, Sep **2025**.
 - S. Chowdhury and **P. S. Rao**. "Journal of Physics", 99-125, **2025**.
 - C. Amala, B. Subbarao, M. Sivaji, **T. Ojha**, B. B. Das, S. P. Mohanty, S. K. Ram. "IEEE Sensors Journal", **2025**.
 - R. Ghosh, **A. A. Selvan**. "Results in Mathematics", 80, 7, 201, **2025**.
 - S. Kumari, **S. A. Sahu**, and M. Biswas, "Mechanics Based Design of Structures and Machines". 1-20, **2025**.
 - Kartika Chandra Tripathy, and **Ajay Bhandari**, "Computer Methods and Programs in Biomedicine", 264, 108706, **2025**.
 - P. Mondal, PK Mahato, "European Journal of Mechanics-A/Solids", 105875, **2025**.
 - A Chaudhuri, T Loha, PK Mahato, AA Amis, B Pal, "Medical Engineering & Physics", 104415, **2025**.
 - Himalaya Sarkar and Subhankar Sen, "Physics of Fluids", 37(8), 083631, **2025**.
 - Himanshu Varshney, Arun Dayal Udai, Suril Vijaykumar Shah, Zafar Alam, "Multibody System Dynamics, Springer Nature" **2025**.
 - Indramani, Arun Dayal Udai, Sanjoy Ghoshal, "Robotics and Autonomous Systems", **2025**
 - Ashish Siddharth, Himanshu Varshney, Arun Dayal Udai, "International Journal of Computational Methods", **2025**
 - Annada Prasad Moharana, Amit Rai Dixit. "Rapid Prototyping Journal", **2025**
 - Ajay Bhandari, Kartika Chandra Tripathy, Sourav Choudhury, Prasanth Bokam, and Arnaud Germaneau. "International Journal of Heat and Mass Transfer", Vol. 251, pp. 108706, November **2025**
 - Rakshit, S, Jeyaraj, A, Paul, T and Mondal, S (**2025**), "Journal of Computer Information Systems",
 - James C.D. and Mondal S., (**2025**), "Systems and Soft Computing",
 - Singh, Nikita; Das, Niladri; Baker, H Kent; Gupta, Jyotirani (**2025**), "Emerald Publishers" (Published Online)
 - Pal, D, Singh, R and Das, N (**2025**) "Journal of International Entrepreneurship, Springer",

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- Singh, N, and Das, N (2025)“An International Journal, Emerald Publication”, (Published Online)
- Enam, M, Singh, N, Das, N and (2025) “ Emerald Publication”, (Published Online)
- Singh, N, Das, N and Enam, M (2025) “Business Process Management Journal, Emerald Publication”,
- Raut, R K, Kumar, R and Das, N. (2025) “Journal of Global Responsibility, Emerald Publication”,
- Altaher Z.A., Ghosh S., Mukherjee M.K., Rajpoot A.“International Journal of Earth Sciences”.2025.
- Farouk S., Sen S., Sarhan M.A., Fathy M., Fagelnour M., El-Kahtany K., Ghosh.” Petroleum Geoscience”.2025.
- Dey, Soumyadip, MohdAdeeb Khan, Shubham Prakash, Lavishajangid, Dinesh Joshi, and Ajay Mandal.”Industrial & Engineering Chemistry Research”(2025-August).
- Saw, Rohit Kumar, and Ajay Mandal.”Advances in Colloid and Interface Science” (2025): 103539. Impact Factor: 19.3.
- Dutta, R., Singh, R., Chakraborty, R., Kundu, G. and MandalA“Environmental Earth Sciences”, 84(13), pp.1-35.2025.
- Karnwal, A., Pandit, Y. K., Roy, C., Mahto, V., & Sahu, C.” ACS omega”, 10(30), 32774-32790.2025.

Patents

- Ashish Siddharth, Arun Dayal Udai, and Ajay Bhandari, Method and Equipment for Ocular Surgery and Drug Delivery (Filed). Application No: 202431060703.

Individual Faculty Achievements

- **Prof. Bodhisatwa Hazra** from the Department of Applied Geology, IIT (ISM) Dhanbad, received the Meldapom Attumalil Georgekutty Young Scientist Award **2025** on 17.09.2025 for his outstanding contributions in the field of Science and Technology, from the MALANKARA MAR THOMA SYRIAN CHURCH. The award carried a cash prize of Rs 50,000/-. The Meldapom Attumalil Georgekutty Merit Award for the year was received by Dr. S. Somanath, Former Chairman ISRO, and Distinguished Visiting Professor, IISc, Bangalore.



- **Professor Sanjit Kumar Pal**, Professor and Former Head, Department of Applied Geophysics, was conferred the **National Geoscience Award 2024** by the **Ministry of Mines, Government of India**, with the award presented by the **Hon'ble President of India, Smt. Droupadi Murmu**, on **26 September 2025** at **Rashtrapati Bhavan, New Delhi**. This prestigious honor—the highest recognition in the field of geosciences in India—acknowledges Prof. Pal's outstanding contributions his outstanding contribution in integrated geological and geophysical methods to study mineral potential in gold bearing zones in parts of North Singhbhum Mobile Belt, Jharkhand. His extensive research spans UAV-based and satellite remote sensing, gravity and magnetic methods, electrical resistivity tomography, seismic tomography, and ground penetrating radar, with broad applications in mining, groundwater and mineral exploration, environmental studies, and disaster mitigation. His extensive research spans **UAV-based and satellite remote sensing, gravity and magnetic methods, electrical resistivity tomography, seismic tomography, and ground penetrating radar**, with broad

applications in mining, groundwater and mineral exploration, environmental studies, and disaster mitigation



- **Prof. Satadru Das Adhikary** acted as an External Expert Peer Review Committee member for evaluation of Research Proposal of CFEES-DRDO Delhi in July 2025.
- **Dr. Pranesh Roy** has joined as an Editorial Board Member of **Scientific Reports** (Nature Portfolio journal, Impact Factor: 3.9).
- **Dr. Bandita Barman** has joined as an Editorial Board Member of **Scientific Reports** (Nature Portfolio journal, Impact Factor: 3.9).
- Prof. A. C. S. Rao has been recognized among the Top 2% Scientists Worldwide in the field of Artificial Intelligence and Image Processing in the Elsevier–Stanford University Global Ranking (2025). He secured a rank of #9324 in the ICT domain with an H-index of 13 and Hm-index of 7, highlighting his impactful contributions to AI and image processing research. This distinction reinforces the institute's leadership in intelligent systems and visual computing.
- Prof. Sanjeev Kumar Raghuvanshi, Professor in the Department of Electronics Engineering at the Indian Institute of Technology (Indian School of Mines) Dhanbad, has been elected to the grade of "Senior Member of SPIE.
- Henry Marion Howe Medal 2025 Awards for the paper titled "Achieving a columnar-to-equiaxed transition through dendrite twinning in high deposition rate additively manufactured titanium alloys", Metall. Mater. Trans. A. (2024). DOI:
- Prof. Avanish Kumar and Prof. Shubhi Gupta have joined the Editorial Board of Scientific Reports (Springer Nature).
- **Prof. Akhilesh Prasad** has been selected for the National Academy of Sciences (NASI), India membership - 2025.
- **Prof. Gajendra K. Vishwakarma** appointed as an Associate Editor of "Journal of Statistical

Theory and Practice".

- **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.
- The course **Finite Element Method in Thermal Engineering** proposed by Prof. Subhankar Sen has been approved for the January-April, 2026 session under the NPTEL scheme.
- **Prof. Ajay Bhandari** has been awarded the "Royal Society Yusuf Hamied International Exchange Award" funded by The Yusuf and Farida Hamied Foundation for the second time with Cranfield University UK.
- **Prof. Ajay Mandal** has been listed in the World's Top 2% Scientists by Stanford University and Elsevier for the year 2025, continuing his consistent recognition since 2020. He is ranked 199 in the Energy subfield under Enabling & Strategic Technologies. Prof. Mandal holds an H-index of 23 and Hm-index of 15, with over 2150 citations to his credit. This recognition highlights his impactful contributions to petroleum and energy research on the global stage.
- **Prof. Ajay Mandal** has been ranked 16th in "Engineering and Technology" and 62nd in "Chemistry" within India by Research.com (2025 rankings). He has also been honored with the 2025 Research.com Chemistry in India Leader Award, recognizing his outstanding contributions to the field.
- **Prof. Sayantan Ghosh**, Assistant Professor in the Department of Petroleum Engineering, has joined the Editorial Team of **SEG Interpretation** as an Associate Editor.

Major Research Output

- An in-depth analysis of time series forecasting methods to predict the time-dependent deformation trend (also known as creep) of salt rock under varying confining pressure conditions is conducted. The research significantly advances time series forecasting in geosciences, offering crucial insights for the safe and efficient management of underground storage in rock salt formations. Seismic Site Characterization Using Earthquake HVSR Modelling is carried out in the Eastern Chhotanagpur Plateau, India. Penetration depth of flow perturbations into a stably stratified layer driven by rotating laterally heterogeneous convection for understanding earth's thermal study. Investigation on seismic crustal an isotropy and sub-crustal deformation beneath Northeast India through harmonic decomposition of receiver function is carried out to understand seismicity and crustal studies.
- International publication of the book "*Introduction to Microwave Photonics*" by SPIE, USA, authored by **Prof. Sanjeev K. Raghuwanshi, Prof. Mandeep Singh, Dr. Ritesh Kumar, and Prof. Santosh Kumar.**

PhD Awarded:

- I. **Awardee:** Dr. Silvia Dutta (17DR000311)
Supervisor/Guide: Prof. M. K. Jain
Thesis Title: An Investigation Into Impacts of Coal Mining on Soil and Water Quality Along with Health Risk in Some Parts of Eastern India
 - II. **Awardee:** Dr. Anjali Kumari (18DR0009)
Supervisor/Guide: Prof. Alok Sinha
Thesis Title: Environmental Dynamics of Soil and Water Contamination in Chromite Mining Areas and Sustainable Remediation for Hexavalent Chromium In Groundwater
 - III. **Awardee:** Dr. Juhi Rani (17DR000636)
Supervisor/Guide: Prof. B. Paul
Thesis Title: Soil Quality Assessment and Potential of Humic Acid Extraction From Lignite Fines in Umarsar and Mata no Madh Mine, Kutch, Gujarat, India
- 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).
 - The Department of Management Studies & Industrial Engineering, IIT (ISM) Dhanbad, under the leadership of Prof Rashmi Singh (PI) and Prof. **Niladri Das**, Prof Sandeep Mondal and Prof J.

K. Pattanayak (Co-PI) in collaboration with the Ministry of Tribal Affairs (MoTA), Government of India, has successfully established a Centre of Excellence (CoE) dedicated to empowering tribal youth through digital skill development and capacity building.

- The CoE successfully enrolled and trained 1,500 tribal students from seven Eklavya Model Residential Schools (EMRS) of Jharkhand - EMRS Basia, EMRS Salgadih, EMRS Tasariya, EMRS Torsinduri, EMRS Kathijoriya, EMRS Kujra, and EMRS Bhognadih in IT and Software development.



- The Department of Management Studies & Industrial Engineering, IIT (ISM) Dhanbad, under the leadership of **Prof Niladri Das (PI)** and **Prof Rashmi Singh** (Co-PI) successfully executed a transformative capacity building programme for women farmers in Salma Panchayat, Bankura District, West Bengal, under the CSR initiative of Coal India. This initiative focused on high-yield millet cultivation and entrepreneurial skill development, empowering women to become self-reliant and economically independent. Participants were trained in modern agricultural practices, soil and crop management, post-harvest processing, and the use of a dedicated digital platform for learning, monitoring, and marketing their produce, ensuring improved productivity and better market access.

Women Faculty Achievers

- **Dr. Niptika Jana**, the female faculty member in the Department of Applied Geophysics, IIT (ISM) Dhanbad, has attained notable professional achievements through sustained contributions to geophysical research, education, and academic leadership, with a strong emphasis on capacity building and inclusivity in the geosciences. She served as Faculty Advisor for the student programme at the **Society of Petroleum Geophysicists (SPG) Expo and Exhibition 2025, Jaipur**, and delivered an **invited academic lecture at the Department of Geology, North-Eastern Hill University (NEHU), Shillong**, contributing to research dissemination and inter-institutional collaboration. In **September 2025**, she presented an oral research paper titled ***"Delineation of 3D crustal architecture across the Karakoram Fault in western Tibet: Integration of seismic velocity and attenuation properties"*** at the **IASPEI-IGA Joint Scientific Meeting, Lisbon, Portugal**, and is scheduled to serve as Co-Convener of the scientific session ***"SM6.1 Joint modelling and inversion of multi-disciplinary geophysical datasets: crust and lithosphere (GD6/TS10)"*** at the **EGU General Assembly 2026, Vienna, Austria**, further strengthening her contributions to international geoscientific research and collaboration.

- Prof. Shubhi Gupta have joined the Editorial Board of Scientific Reports (Springer Nature). Prof. Aditi Sengupta received the Smt. SheelaBaya National Award on 15th September **2025** from the Institution of Engineers, Udaipur Local Centre for technological advancements in Mechanical Engineering.

- **Prof. Sengupta** has joined Scientific Reports (Springer Nature) as an Editorial Board Member and has been promoted to Associate Editor for the journal Frontiers in Aerospace Engineering, Lausanne Switzerland.

- **Prof Rashmi Singh**, Assistant Professor, Department of Management Studies & Industrial Engineering, IIT (ISM) Dhanbad, has created a Centre of Excellence, Ministry of Tribal Affairs, GOI to impart training in IT and software to the tribal students of Jharkhand and have trained 1500 students from the EMRS schools of Jharkhand.



- **Prof Rashmi Singh**, Assistant Professor, Department of Management Studies & Industrial Engineering, IIT (ISM) Dhanbad, has successfully imparted training to 130 women farmers in Bankura under the CSR project of CIL for creating entrepreneurs in millet farming and business development.



- **Prof Rashmi Singh**, Assistant Professor, Department of Management Studies & Industrial Engineering, IIT (ISM) Dhanbad, has imparted training under STEM education to 1800 students studying in various underprivileged government schools in remote areas of Dhanbad under the CSR project of BCCL.



International Visits

- Prof. Ashutosh Tripathy attended the Australasian Exploration Geoscience Conference **2025** at Perth, Australia during September **2025**.
- Prof. M.K. Mukherjee, delivered a presentation of a paper titled: Structural Geometry, Geochemistry and Emplacement Scenario of a Gabbro Intrusive in Archaean Bhavani Gneissic Complex, Southern Granulite Terrain, India: Petrogenetic and Metallogenic Implications in the International Conference on 22nd Annual Meeting of the Asia Oceania Geosciences Society (AOGS **2025**) held in Singapore during 27 July to 01 August **2025**. The presentation received widespread appreciation from several peers including renowned geophysicist Prof. Gregory Moore of University of Hawaii.



- Avirup Bose, a research scholar under Prof. A.S. Majumdar presented research paper in "Goldschmidt-2025" and participated in Geochemical Mapping Workshop organized by the "Czech Geological Survey" in Prague during July 6-11, **2025**.



- Prof. R. Anand & Prof. P. Prusty presented research papers in the prestigious international conference "Goldschmidt-2025" held at Prague, Czech Republic during July 6-11, **2025**.



- Vishakha Sah, a PhD Scholar of the Department, participated in the Summer Schools program during July 14-27, **2025** held at St. Petersburg Mining University (Empress Catherine II), Russia under the Indo-Russian Collaboration.



- On August 22, **2025**, the department hosted an Expert Talk by Dr. Arpit Narechania, Assistant Professor at the Hong Kong University of Science and Technology (HKUST), titled "Human-Centric AI Guidance for Visual Analytics." Dr. Narechania, whose research focuses on AI-driven visual analytics and human-computer interaction, discussed interactive methods for bias detection and collaborative decision-making between humans and AI systems.

His visit strengthened international academic engagement and highlighted the department's emphasis on human-centric AI research

- Dr. Saravanan Pichiah was selected as one of the delegates (15 delegates from India) for participating in the International Workshop on "Sustainable Handling of Innovative Membrane Technologies for Environmental Protections (SHINE)" held from

22–25 September 2025 at Universität Hamburg, Germany. It was jointly organized by Helmholtz-Zentrum Hereon, Hamburg, and the Indian Institute of Technology Roorkee with a financial support from Indo-German Science & Technology Centre (IGSTC). The workshop was coordinated by Prof. Bhaskar Jyoti Deka, Advanced Membrane Research Lab, Department of Hydrology, IIT Roorkee, and Prof. Volkan Filiz, Head of Department, Institute of Membrane Research, Hereon. Dr. Saravanan shared research presentation on the topic of “Metal-Organic Framework Based Polymeric Nanocomposite Membranes for Enhanced Separation Performances”. This workshop allowed the Indian members to build a strong network with German researchers from universities, research organization and industries.



Prof. Saravanan Pichiah at the International Workshop held at Universität Hamburg, Germany.

- **Prof. Gyan Prakash** has been invited to join the Center for Advanced Studies at the University of Hildesheim as a Fellow. His fellowship is part of the project Philosophising in a Globalised World, which is funded by the Deutsche Forschungsgemeinschaft (German Research Foundation – DFG). This prestigious appointment recognizes **Prof. Prakash's** contributions to the field and provides a platform for interdisciplinary collaboration within

this international research initiative.



- Prof. Shibayan Sarkar visited Robert Gordon University (RGU), Aberdeen, UK, to work as an **Exchange Researcher** at RGU under the supervision of Prof. Mamdud Hossain for one month (1st July – 31st July 2025). Dr. Sarkar was funded under the Global Research Scheme (SOCET). Dr. Sarkar conducted a workshop on the 'Hydrokinetic turbine' for the faculty colleagues and Research communities across the university, and he also delivered a lecture addressing faculty members of the institute.



During his visit to RGU, UK, Dr. Sarkar held several meetings with RGU faculty members. **Dr. Ajay Bhandari**, who was also visiting the University of Aberdeen, facilitated a meeting between Dr. Bhandari and RGU faculty members to discuss potential future collaborations.



- **Prof. Ajay Bhandari** visited Cranfield University under the Royal Society International Exchange Project, hosted by Prof. Tamas Jozsa. Invited as a guest speaker, he delivered a research talk in the broad area of computational oncology and exchanged exciting research ideas with the Cranfield community. The visit provided an inspiring platform to explore new directions for collaboration.



- Prof. Indranil Bardhan, Professor in the McCombs School of Business, University of Texas, Austin, delivered a talk on the topic titled, “AI applications in Business and Healthcare” on June 27, 2025 (Friday) in the Auditorium of the Department of Management Studies & Industrial Engineering.
- Prof. Magesh Chandramouli, Professor in the Purdue University USA delivered a talk on “Metaverse and VR Applications Fostering Digital Excellence Through Virtual and Augmented Reality” on July 05, 2025 (Saturday) in the Golden Jubilee Lecture Theatre of IIT (ISM) Dhanbad.



- Prof. Pierre René Maréchal, Professor at the Toulouse Institute of Mathematics, France, delivered a technically rich and intellectually

rigorous session on the topic: “Non-linear Optimization: Mathematical Foundations and Real-World Applications” on July 05, 2025 (Saturday) in the Golden Jubilee Lecture Theatre of IIT (ISM) Dhanbad.



- Prof. Sanjay Mishra, distinguished academic and researcher from the Institute for Energy Technology (IFE), Norway, delivered a timely and visionary address titled: “AI-Driven Financial Security and Data Sovereignty: A Conceptual Framework for a Resilient Digital Economy” on July 05, 2025 (Saturday) in the Golden Jubilee Lecture Theatre of IIT (ISM) Dhanbad.



Workshop / Conference / Seminar

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

- Prof. P. R. Sahoo delivered a keynote lecture on the topic "Critical mineral exploration potential in India: Appraisal from global context" in the National Conference on "Critical Minerals: Exploration and Exploitation" on 7-8 August 2025 at Jabalpur, Madhya Pradesh.



- Prof. S. Sarangi delivered invited talks in the National Seminar on "Geology and Exploration of Economic Deposits of Jharkhand" held at Dept. of Geology, Vinoba Bhave University, Hazaribagh during 12-13 July 2025.



- Prof. S. Singh delivered a Keynote lecture on "Proterozoic Gold Mineralizing System of North Singhbhum mobile Belt: An Ore System Approach) in the two-day seminar, organized by the Department of Geology, Vinoba Bhave University, Hazaribagh during 12-13 July 2025.



- Prof. M.K. Mukherjee was invited by Geological Survey of India to impart training on "Advanced Course in Structural Geology" to their officers at Zawar, Udaipur district, Rajasthan from 05-07 July 2025. The training included lectures, hands-on practical, and rigorous fieldwork, singularly imparted by Prof. M.K. Mukherjee.



Prof. M.K. Mukherjee with Dr. Rohan Das, Director of Training and Capacity Building of Geological Survey of India, at Zawar Field Training Center, and with participants

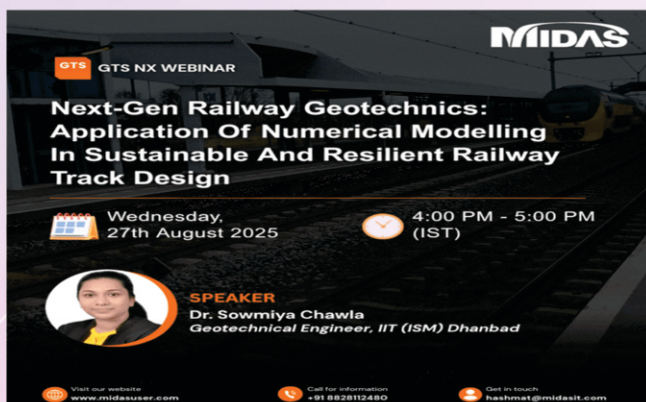
- Prof. A.K. Bhaumik conducted One-day workshop on July 3, 2025 for the students of D.P.L.M.A +2 High School, Nawagarh, Dhanbad to introduce them with Geology and its scope.
- The intensive **two-week GIAN Course on Engineering Seismology** was jointly led by **Prof. Utpal Dutta (University of Alaska, Anchorage, USA)** and **Prof. Mohit Agrawal (Department of Applied Geophysics, IIT (ISM) Dhanbad)**, and provided comprehensive training through **lectures, discussions, tutorials, hands-on exercises, and field sessions.**

The course covered key technical areas including seismic source characterization, ground motion analysis, seismic microzonation, and hazard assessment, ensuring an effective integration of theoretical concepts with practical applications. Certificates were awarded to participants during the valedictory session, marking the successful completion of this international academic

programme conducted under the **Ministry of Education's GIAN initiative**, which aims to foster global collaboration and capacity building in the field of engineering seismology.



- A GTS NX Webinar on “Next-Gen Railway Geotechnics: Application of Numerical Modelling in Sustainable and Resilient Railway Track Design” was held on 27th August 2025, featuring Prof. Sowmiya Chawla, Associate Professor, IIT (ISM) Dhanbad, as the speaker.



Prof. Chawla discussed the use of finite element method (FEM) modelling integrated with experimental validation to design sustainable and resilient railway track systems. She demonstrated applications using MIDAS GTS-NX for simulating track-ground interactions, highlighting areas such as geosynthetic-reinforced embankments, reinforcement mechanisms, mud-pumping mitigation, cyclic loading durability, and micropile-based

rehabilitation strategies. The webinar drew over 100 participants from industry and academia and concluded with an engaging Q&A session making it a valuable knowledge-sharing platform in advancing railway geotechnics.

- The IAHR Eastern India Young Professionals Network (YPN), proudly hosted by our department, completed the first lecture in the IAHR Eastern India YPN Lecture Series. On September 3, 2025, Dr. Michael Nones, Associate Professor from the Institute of Geophysics, Polish Academy of Sciences, delivered an engaging session on "Satellites as a Tool to Depict Source-to-Sink Dynamics". The inaugural lecture received over 100 registrations from 14 countries, reflecting the global interest and the strength of the IAHR community. The IAHR EI YPN is committed to bringing more such engaging and insightful lectures every month. The recordings of these sessions will be made available on the IAHR online library, ensuring accessibility for students, faculty, and professionals within and beyond our community.



- July 7-12, 2025 – Short-Term Course on “Blockchain and Cybersecurity for Cyber Threat Prevention.” Conducted under the Malaviya Mission Teacher Training Programme (MMTTP) and coordinated by Prof. Arup Kumar Pal, the program brought together 111 participants from across India and featured expert sessions on block chain integration, cryptography, and secure digital frameworks.
- September 3, 2025 – Alumni Talk by Mr. Raj Kumar Jain (2003 Batch) on "The Importance of Building a Financial Roadmap and Investments." The hybrid session focused on personal finance planning, mutual funds, and investment strategies for students and young professionals.
- Sept. 9, 2025–Expert Lecture by Mr. Aabhishek Mitra, Founder and CEO of Indian Cyber Security

Solutions (ICSS), on “Cybersecurity in the Age of Artificial Intelligence.” The talk covered AI-driven cyber threats and ethical hacking practices, highlighting the intersection of AI and cyber defense.

- September **2025** – Industry Interaction with Microsoft Leaders Mr. Sanjib Biswas and Mr. Ashay Sinha on "Insights into the Future of AI and Engineering." The discussion provided valuable career and technical perspectives on AI development, Copilot systems, and the role of foundational engineering skills in modern AI careers.
- **Prof. Nitai Pal (CI)** and Prof. Pradip Kumar Sadhu (Co-CI) The Department of Electrical Engineering, IIT (ISM), Dhanbad have organized a 5-days Executive Development Program (EDP) on “Electrical Safety and Precautionary Maintenance for Sustainable Mines” from 04th to 08th August **2025**. The program has been designed to keep in view the diverse aspects of electrical safety issues of the miners and preventive maintenance of machinery under operations in underground and open-cast mines. Besides the huge production, safety is the first and foremost choice for the miners as well as the preventive maintenance of machinery for the purpose of optimum production.



So, the topic is quite relevant nowadays for sustainable mines to increase productivity efficiently and effectively with safety. There were 48 executives from CIL & its Subsidiaries and other such organizations participated in the program. The experts from DGMS and IIT etc. have shared their valuable experience, case studies and recent development on this emerging area. The program was deeply appreciated by all the executives. Feedback has been provided by every executive which shows its grant success.

- **CI:** Prof. Kartick Chandra Jana **Co-CIs:** Prof. Soumyabrata Barik, Prof. Sukanta Halder, **Prof.**

Gauri Shankar The objective of this online webinar is to bring together experts and excellence from both academia and industry, delivering insightful sessions on two interconnected concepts at the forefront of global efforts to combat climate change, reduce air pollution and transition away from fossil fuels. This webinar aims to provide participants with a comprehensive understanding of Power Electronics for EVs with a strong focus on power electronic converters, control strategies, charging infrastructure design, and battery management systems.

- The online webinar is organized under the Centre for Renewable Energy (CRE) at IIT (ISM) Dhanbad. This centre is an interdisciplinary research and development hub dedicated to advancing sustainable energy solutions through innovation, collaboration, and technology deployment. Established with the vision to contribute to India's clean energy goals, CRE integrates academic research, industry partnerships, and societal impact. The online webinar was organized from 7th August **2025** to 9th August **2025**.



- **Short Term Training Program** on “Six Sigma Green-Belts” during June 30-July 4, **2025**
 - Six Sigma is a fact-based data driven structured methodology that is used to create breakthrough improvements in business processes. It is used to solve organizational problems where the solution is not known. The program augments the participants existing domain knowledge and expertise with statistical thinking and application. This aims to help them to channelize their efforts and knowledge in the right direction and achieve ground breaking results in their field.

- The program hosted sessions on deployment of Six Sigma in organization, organization hierarchy for Six Sigma, project hopper, project charter, voice of customer, critical to quality, tree diagram, pareto, SIPOC; measurement system analysis, capability analysis; process analysis, problem analysis, control charts, test of hypothesis, regression analysis; solution prioritization matrix, solution matrix, RIC1 – chart, before after tests, solution implementation; control Plan, control charts for online analysis, mistake proofing, Kaizen philosophy.



- **Short Term Course on “Machine Learning with Excel”**

This course was aimed to introduce participants to the fundamental concepts and applications of Machine Learning (ML), a core area of Artificial Intelligence that enables systems to learn from data for tasks such as prediction, classification, and dimensionality reduction. Unlike conventional approaches that require programming knowledge in Python or R, this course adopts a user-friendly, no-code methodology using Microsoft Excel, making it accessible to participants from varied academic and professional backgrounds. The program includes a balanced mix of theoretical sessions and practical hands-on exercises, guiding participants through the process of developing, training, validating, and applying ML models. The hands on will help the participant to gain some experience on how to develop, train and validate a ML model as well as how to use this model for practical application. No prior programming experience is required, making this an ideal opportunity for anyone interested in learning ML in an intuitive and practical manner.

- **National Conference on Mathematical Analysis and Applications (NCMAA) from 4-6 September**

NCMAA brings together researchers, scholars, and scientists to share ideas and recent developments in Mathematical Analysis and its applications. The event features expert lectures, promoting interdisciplinary dialogue and collaboration, especially among young researchers. Participants will explore the role of mathematics in addressing real-world challenges across science, technology, and industry. The conference fosters innovation, knowledge exchange, and future research directions in both pure and applied mathematics. It aims to strengthen the mathematical community and encourage impactful, collaborative research.



- **GIAN course on "Introduction to Hydrodynamic Stability" from 15-19 September 2025**

- The course was graced by Prof. Sergey A. Suslov, Swinburne University of Technology, Australia, an internationally acclaimed expert in theoretical fluid mechanics and nonlinear wave phenomena, who will deliver expert lectures throughout the programme.

Three faculty members from the department, namely, **Prof. Arun Dayal Udai**, **Prof. Vivek Bajpayee**, and Prof. Pawan Kumar Singh, participated in the *Tri-Services Academia Technology Symposium (T-SATS 2025)*, held at the Manekshaw Centre Auditorium, New Delhi, during 22nd and 23rd of September.



The event is a landmark initiative fostering academia–defence collaboration at Manekshaw Centre, New Delhi. With 200+ Institutions, 50+ R&D Centres, 222 Innovations, and participation from the Army, Navy & Air Force, the event showcased cutting-edge research in technologies critical to national defence.



Executive Development Program on Additive Manufacturing for DRDO Scientists

- A two-week Executive Development Program (EDP) on “Additive Manufacturing” was successfully organized at the Mechanical Engineering Department, IIT (ISM) Dhanbad for scientists from various laboratories of the Defence Research and Development Organisation (DRDO), Ministry of Defence. The program catered to middle and senior-level DRDO scientists, providing them with a comprehensive and application-oriented understanding of advanced additive manufacturing technologies.



The program was coordinated by Prof. Amit Rai Dixit and Prof. Alok Kumar Das, with Prof. Amitava Mandal serving as the Co-Coordinator. The sessions were enriched with hands-on laboratory demonstrations, expert lectures, and interactive case discussions. Participants engaged directly with 3D printing systems and simulation tools, gaining both theoretical insight and practical exposure.

The feedback from participants reflected a high level of appreciation for the depth, structure, and defense relevance of the training. The successful completion of the course marks another significant step toward fostering indigenous capacity building in advanced manufacturing technologies within India's strategic R&D ecosystem.

- **Prof. Ajay Bhandari** conducted an online refresher course on “*Fluid Mechanics in Action: Principles, Advances, and Applications*” under the MMTTP regime. The 12-day program was attended by 150 faculty members from across the country and featured 24 expert speakers from various IITs. The course provided an enriching platform for participants to update their knowledge and engage with recent advances in the field.
- Executive Development Program on 'Quality Engineering, Quality Management and Engineering Metrology' for ISRO Scientists and DGQA officers
- A two-week Executive Development Program (EDP) on “*Quality Engineering, Quality Management and Engineering Metrology*” was successfully organized during 14 - 19 July, **2025** at the Mechanical Engineering Department, IIT (ISM) Dhanbad for scientists from various laboratories of the Indian Space Research Organisation (ISRO), Department of Space and for Brigadier and Director as well as one officer of Directorate General of Quality Assurance (DGQA), Ministry of Defence, Govt. of India and One research scholar of IIT (ISM) Dhanbad. The program catered to middle and senior-level ISRO scientists/ DGQA officers, providing them with a comprehensive and application-oriented understanding of Quality Engineering, Quality Management and Engineering Metrology.

The Program Coordinator was Prof Nirmal Kumar Singh Professor with **Prof. Vivek Bajpai** Associate Professor as Co-Coordinator. The sessions were enriched with hands-on laboratory demonstration, expert lecture from Prof.(Retd.) S P Mukherjee Former Centenary Professor of Statistics Calcutta University and Noted Quality Expert. Prof Sandeep Mandal Professor & Head Department of Management Studies and Industrial Engg. and Prof Somnath Chattopadhyaya Professor & Head Department of Mechanical Engg. also conducted lectures. Participants engaged directly with various metrological instruments for practical exposure and acquired theoretical insight and practical

