



IIT
ISM INDIAN INSTITUTE
OF TECHNOLOGY
INDIAN SCHOOL OF MINES
DHANBAD

Department of Mining Engineering

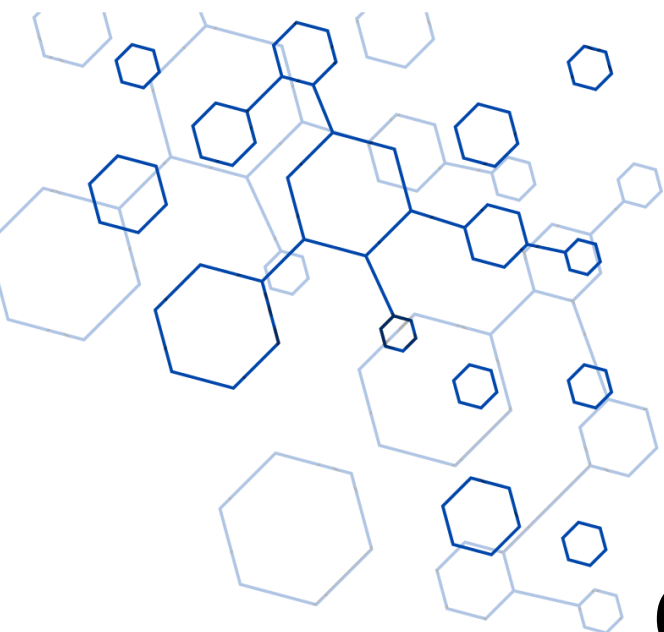


THE MINING EDGE

MONTHLY NEWSLETTER

VOLUME 5

January 2025



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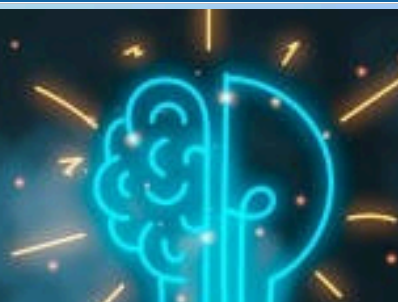
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Mr. Sudhanshu Pandey

Mr. B. Sai Prasad



From HoD's Desk



Dear Readers,

As we embark on the journey of 2025, numerous opportunities and challenges lie ahead in maintaining a competitive edge in the ever-evolving fields of academics and research within Mining Engineering discipline. I am excited to share some significant news: IIT (ISM) Dhanbad is all set to launch a 5-year Dual Degree Programme starting from the academic session 2025-26. This innovative programme will offer a B.Tech in Mining Engineering and an MBA in Logistics and Supply Chain Management, with multiple exit options in accordance with the NEP 2020. The programme was approved in the 33rd meeting of the Board of Governors (BOG) of the Institute.

This programme will be offered jointly by IIT (ISM) Dhanbad and IIM Mumbai at the Centre of Excellence for Integrated Engineering & Management, which will be established in Angul, Odisha. The programme will have an intake of 60 students, with admissions conducted through JoSSA. Upon successful completion, students will earn a B.Tech degree in Mining Engineering from IIT (ISM) Dhanbad and an MBA degree in Logistics and Supply Chain Management from IIM Mumbai.

This initiative stems from the Memorandum of Understanding (MoU) signed between IIT (ISM) Dhanbad and IIM Mumbai, marking a significant step toward offering joint academic programs focused on Digital Mining Technology, Logistics, and Supply Chain Management. The programme will bridge the gap between engineering and management, equipping students with the expertise required to lead in the evolving global mining and logistics sectors.

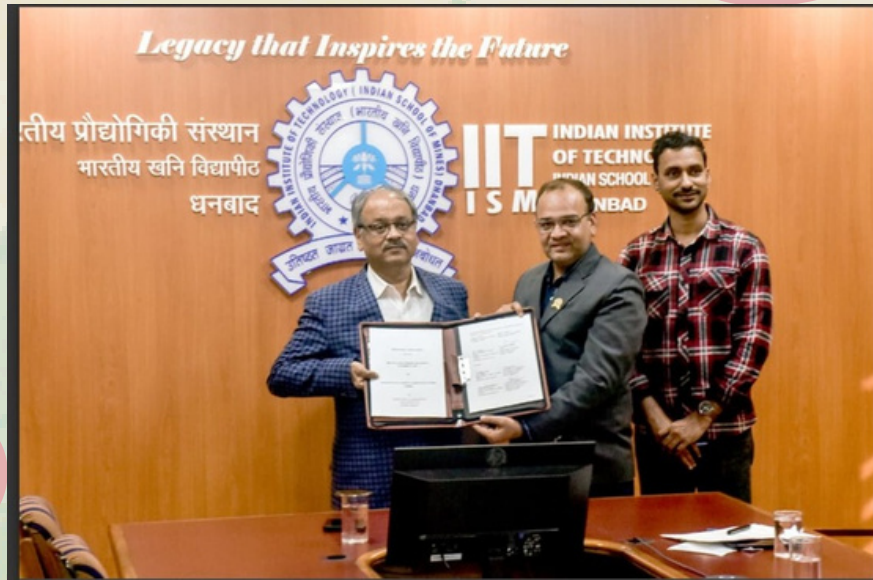
As we embrace the era of Industry 4.0 and Digital Mining, this programme will further strengthen the Department of Mining Engineering's focus on cutting-edge digital technologies. This includes applications of AI and machine learning in mining, mine automation and robotics, the development of smart sensing technologies for real-time monitoring, and skill development initiatives to prepare mining professionals for the future.

The Department of Mining Engineering at IIT (ISM) Dhanbad is committed to advancing these technologies and ensuring that India stays at the forefront of global mining innovations. The collaboration between IIT (ISM) Dhanbad and IIM Mumbai underscores our collective efforts to push the boundaries of mining and management education, paving the way for a more digital and sustainable future in the mining industry.

As we look ahead to a new beginning, we are also excited to share the activities, achievements, and notable developments in the Department of Mining Engineering over the past month in this issue.

With kind regards,
D. P. Mishra

Signing of MoU with Ministry of Road Transport and Highways Government of India



IIT (ISM) Dhanbad has entered into a Memorandum of Understanding (MoU) with the Ministry of Road Transport and Highways (MoRTH), Government of India, to collaborate on the designs and drawings of tunnels as well as their supporting structures. The MoU was signed at the Administrative Building of the institute in the presence of:

- Prof. Sukumar Mishra, Director, IIT (ISM) Dhanbad
- Shri D. Sarangi, Director General (Road Development) and Special Secretary, MoRTH
- Prof. Sagar Pal, Dean (Research & Development)
- Prof. Bhanwar Singh Choudhary, Department of Mining Engineering
- Shri Rahul Gupta, Chief Engineer, MoRTH
- Shri Ramshid Padusha, MoRTH

Under the agreement, the Ministry of Road Transport and Highways will leverage IIT (ISM) Dhanbad's expertise in reviewing the technical design and structural drawings of tunnels, identifying any necessary improvements, and suggesting remedial measures as needed. Through this collaboration, the Ministry of Road Transport will benefit from the in-depth knowledge and advanced technical expertise of IIT (ISM) in assessing tunnel designs and providing actionable recommendations to ensure structural safety and efficiency. This partnership marks a significant step toward strengthening the development and maintenance of the road infrastructure in India, with a focus on innovative engineering solutions for tunneling projects.

Academic & Research collaborations with Pennsylvania State University under the MOU



Interaction of Prof. Sekhar Bhattacharyya with the faculty members of the Department



Felicitations of Prof. Sekhar Bhattacharyya

Prof. Sekhar Bhattacharyya from the Pennsylvania State University, USA, visited IIT (ISM) Dhanbad during 14-24 January 2025. During his visit, he interacted with the faculty members and students of the Department of Mining Engineering to further strengthen the academic and research collaborations with Penn State University under the framework of the MoU. Prof. Bhattacharyya also took some classes on Mine Ventilation and Environment for the B.Tech. Mining Engineering students of the Department.

The interactions provided an excellent opportunity to explore the potential for joint projects and publications, faculty and student exchange programs, and other collaborative initiatives to strengthen the academic partnership between the two esteemed institutions.



Classroom interaction of Prof. Bhattacharyya with B.Tech. Mining Engineering Students of the Department

Longwall Training Gallery Visit

The Department of Mining Engineering organized a visit to the Longwall Training Gallery on 19 January 2025 as part of the educational and cultural tour of the participants under the Yuva Sangam, Phase-V program. The participants came from various parts of Uttarakhand, accompanied by their Coordinators and the Nodal Officer from IIT Roorkee. The program, aimed at fostering cultural and educational exchange, offered the delegates a unique opportunity to explore the academic and technological ecosystem of IIT (ISM) Dhanbad.

Prof. Ankush Galav, Mr. Sudhanshu Pandey, and Mr. Manish Kumar of the Department guided the delegation from Uttarakhand, along with their coordinators in exploring the state-of-the-art Longwall Training Gallery facility.

The visit provided the delegates an in-depth understanding of the advanced mining techniques and equipment. The event served as a meaningful platform for fostering cultural exchange between the regions, truly embodying the spirit of the Yuva Sangam initiative.



Visit of Experts to the Department



Visit of Prof. G L Sivakumar Babu

Prof. G L Sivakumar Babu from IISc Bangalore, a Geotechnical Engineering expert, visited the Longwall Training Gallery and Virtual Reality Mine Simulator (VRMS) facilities of the Department. He was warmly welcomed by the Head of the Department, Prof. D.P. Mishra. It is always inspiring to interact, share knowledge and experiences with the external experts.



Visit of Prof. Himanshu Bhushan Shau

Prof. Himanshu Bhushan Sahu, Dean (Alumni, Industry and International Relations), NIT Rourkela and an expert in Mine Environment and Safety Engineering, Environmental Impact Assessment (EIA), and Environmental Management in Mining, visited the Department. He was warmly welcomed and felicitated by the Head of the Department, Prof. D.P. Mishra.



Research Publications

- Roy S., Mishra D.P., Agrawal H., Bhattacharjee R.M. (2025). Development of productivity model of continuous miner operators working in hazardous underground mine environmental conditions. *Measurement* 239, 115516, Elsevier. <https://doi.org/10.1016/j.measurement.2024.115516>
- Mishra D., Mishra D.P., Mohalik N.K., Ray S.K., Pandey J.K. (2025) Effect of depth and particle size on spontaneous combustion of coal in deep underground mines of Jharia coalfield. *Journal of Sustainable Mining*, 24(1). <https://doi.org/10.46873/2300-3960.1443>
- Deressa G.W., Choudhary B.S., Jilo N.Z. (2025) Advanced bench design and technical challenges in open pit mining: a comprehensive review of stability and productivity. *Arabian Journal of Geosciences* 18, 28. <https://doi.org/10.1007/s12517-024-12157-2>
- Katariya1a N.K., Choudhary B.S., Falak M.E., Raina A.K. (2025) Optimizing open-Pit iron ore mines waste dump stability with an increased height: a geotechnical prospective *Geomechanics and Engineering*, 40, No. 1 (2025)69-78. <https://doi.org/10.12989/gae.2025.40.1.069>
- Deressa G.W., Choudhary B.S. (2025) Evaluating Productivity in Opencast Mines: A Machine Learning Analysis of Drill-Blast and Surface Miner Operations. *Natural Resource Research* 34, 215–251. <https://doi.org/10.1007/s11053-024-10429-y>



Mine Excursions



The Department of Mining Engineering successfully organized the annual educational excursion for the 2nd Year B.Tech. Mining Engineering students to Eastern Coalfields Limited (ECL) during 18–19 January 2025. During the excursion, the students visited the Jhanjra Underground Coal Mining Project and Sonepur Bazari Opencast Mining Project of ECL. The students gained invaluable insights into the real coal mining operations during these field visits.

The visits provided an opportunity to the students to observe the mass production underground and opencast mining technologies, working of advanced mining machineries, and safety protocols in practice. Accompanied by the faculty members of the Department and guided by industry professionals, the students witnessed the mining excavation, ventilation system, and sustainable mining practices. Interaction of the students with the faculty members and field experts highlighted the operational contrasts between the underground and opencast mining projects, enriching their understanding of coal production dynamics.

Aligned with the Department's mission to prioritize field-based learning, the excursions provided the students a platform to connect the theoretical concepts with the on-ground mining practices. Such exposure is pivotal in shaping future mining engineers equipped to innovate and lead the evolving mining sector.

The Department extends heartfelt gratitude to the management of Eastern Coalfields Limited (ECL) for their support in facilitating the mine excursions. Special thanks to the faculty members and ECL team for ensuring a safe, informative, and impactful excursion and learning experience to the students.

Participation in Chintan Shivir of Ministry of Coal at Sushma Swaraj Bhawan, New Delhi



Prof. R M Bhattacharjee, Professor, Department of Mining Engineering and Dean, International Relations & Alumni Affairs, IIT (ISM) Dhanbad, participated in the Chintan Shivir 2.0 of Ministry of Coal at Sushma Swaraj Bhawan, New Delhi and delivered an insightful speech on Sustainable Mining and Systematic Mine Closure for depleting mining resources. He was felicitated by Shri G Kishan Reddy, Hon'ble Union Minister of Coal & Mines, and Shri Vikram Dev Dutt, Secretary of Coal.

Participation in Chintan Shivir of Ministry of Mines at Vigyan Bhawan, New Delhi

खान मंत्रालय
MINISTRY OF
MINES
SESSION I
Increasing Mineral Production and
Operationalization of Mineral Blocks



Sh. Dinesh Mahur
Joint Secretary, M/o Mines



Sh. Sanil Duggal
Global Advisor



Sh. Ashish Agrawal
CPM(NZ), ISM



Sh. Rajesh G. Nair
DGM, Govt. of Odisha



Sh. Anil Ostwal
Jt. VP, Laxmi Steel Ltd.



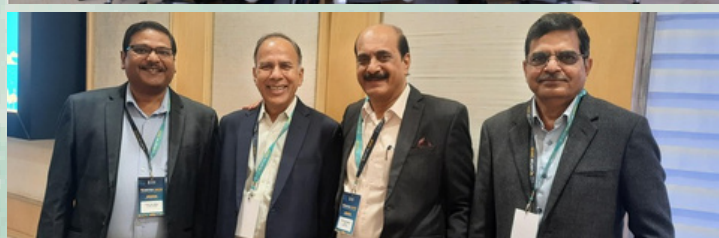
Sh. Pratik Kumar Satija
Executive Incharge
Tata Steel Mining Ltd.



Prof. R.K. Sinha
IIT-ISM, Dhanbad



Prof. Sandeep Kumar Bera
IIT-Delhi



The Ministry of Mines organized a pivotal Chintan Shivir at Vigyan Bhawan, New Delhi, in the esteemed presence of Union Minister for Coal and Mines, Shri G. Kishan Reddy; Union Minister of State for Coal and Mines, Shri Satish Chandra Dubey; and Secretary, Ministry of Mines, Shri V.L. Kantha Rao. The event brought together senior government officials, industry leaders, and experts to discuss transformative strategies for the mining sector, focusing on innovation, sustainability, and local manufacturing.

As part of its commitment to boosting India's mining sector, Prof. R K Sinha, Associate Professor, Department of Mining Engineering, participated as a core member in a session on how to increase mineral production and accelerate the operationalization of mineral blocks. During the discussions, special focus was on simplifying regulatory processes, enhancing exploration capabilities, and leveraging advanced technologies to unlock the full potential of India's mineral resources.

Certificate Distribution Ceremony of “Training of Trainers (ToT)” Program

“Training of Trainers (ToT)” program organized by the Department of Mining Engineering successfully concluded with the distribution of certificates to the participants. It was designed to enhance the skills and teaching quality of trainers under the Pradhan Mantri Kaushal Vikas Yojana (PMKVY 4.0) in collaboration with the National Skill Development Corporation (NSDC). The Inaugural cum Skill Certificate Distribution Ceremony was held at 11:30 AM on 25 January 2025 at the TEXMiN Seminar Hall, Ground Floor, i2h Building, IIT (ISM) Dhanbad.

The event was graced by the presence of Prof. Sukumar Mishra, Director, IIT (ISM), Prof. Dheeraj Kumar, Dy. Director, IIT (ISM) and Prof. D.P. Mishra, HOD, Mining Engineering, IIT (ISM). Mrs. Srimoyee Mitra, Deputy General Manager, Government Programs, NSDC, GoI, graced the occasion as the special guest and joined the program in the online mode. This ceremony celebrated the remarkable achievements of the participants in the ToT program held in September 2024.



Annual R&D Fair 2025

Department of Mining Engineering participated in the “Annual R&D Fair 2025” of the institute organized on 01 February 2025. The Department showcased its significant products, technologies and processes development, research facilities, capabilities for possible technology commercialization, industry-academia collaboration, and industry-sponsored R&D and consultancy projects.



Farewell Meet



On 31 January 2025, the Department of Mining Engineering bid farewell to Mr. Upadhyay, upon his superannuation from his 34 years-long service as Lab Attendant. The farewell was organized in the conference room of the Department, which was attended by all the faculty members, and technical and non-technical staff of the Department. The HOD, Mining Engineering acknowledged the contributions of Mr. Upadhyay for the Department. All the attendees also shared their fond memories with Mr. Upadhyay during the farewell meet.



Farewell to Mr. Ashim Upadhyay

Events Calendar of the Department of Mining Engineering for Centenary Celebration of the Institute

Sl. No.	Name of the event	Proposed Date	Responsibility
1.	International Conference on “Mine Ventilation and Environment for Green Mining (MVEGM-2024)” was held at, Puri, Odisha	20-22 December, 2024	Convener: Prof. D.P. Mishra Co-Conveners: Prof. P. Sahu Prof. B. Behera Treasurer: Prof. A. Yadav
2.	Controlled Blasting Management and Safety for Road Construction	February, 2025	Prof. B.S. Choudhary
3.	Workshop on “Geodesy and GNSS”	May, 2025	Prof. V.G.K. Villuri
4.	Seminar on “Mine Closure and Reclamation”	June, 2025	Prof. S. Agarwal
5.	National Seminar on “Mining Methods and Ground Control”	June, 2025	Prof. Ashok Kumar
6.	Workshop on “Slop Stability and Monitoring Techniques”	July, 2025	Prof. R.K. Sinha
7.	7th National Seminar on “Surface Mining”	October, 2025	Prof. B.S. Choudhary
8.	Khanan’25, the Annual Techno-Mining Fest of Mining Engineering Department	October, 2025	Prof. D. P. Mishra
9.	Workshop on Artificial Intelligence Applications in Mining Industry	December, 2025	Prof. S. Agarwal
10.	Controlled Blasting Management and Safety for Road Construction	December, 2025	Prof. B.S. Choudhary
11.	Workshop on “Deep Coal Mining”	June, 2026	Prof. Ashok Kumar
12.	Khanan’26, the Annual Techno-Mining Fest of Mining Engineering Department	October, 2026	Prof. D. P. Mishra

Faculty Profile of the Department



Prof. V M S R Murthy
Professor (HAG)
On Deputation As Director
IIST Shibpur
Research Interest:
Rock Excavation Engineering



Prof. Arvind Kumar Mishra
Professor (HAG)
On Deputation As Director
CIMFR
Research Interest:
Explosive Engineering, Rock
Blasting Technology, Rock
Excavation Engineering,
Opencast Mining



Prof. Dheeraj Kumar
Professor (HAG)
Research Interest:
Digital Mining Technologies,
Mine Surveying & Geospatial
Technologies



Prof. R M Bhattacharjee
Professor
Research Interest:
Underground Coal Mining
Technology, Risk Assessment
And Safety Management,
Emergency Response &
Disaster Management,
Accident Investigation, Mine
Fire And Explosion



Prof. Devi Prasad Mishra
Professor
Research Interest:
Mine Ventilation And Environmental
Engineering, Mine Fire And
Explosion, Application Of CFD In
Mine Ventilation And Environmental
Engineering, Methane
Drainage/CBM/UCG,
Stowing/backfilling With Fly
Ash/pond Ash, Characterization Of
Fly Ash/pond Ash



**Prof. Bhanwar Singh
Choudhary**
Professor
Research Interest:
Drilling & Blasting Technology,
Underground Metal Mines,
Computer Aided Mine Planning,
Tunnel Engineering



**Prof. Subhas Chandra
Bhowmik**
Adjunct Professor
Research Interest:
Underground Metal Mine,
Green Field Project from
Planning to Operation, Shaft
Sinking



Prof. Anindya Sinha
Professor of Practice
Research Interest:
Mine Planning & Design,
Mine Environment
Planning & Management,
Mine Mechanization &
Digitization



Prof. Partha Sarathi Paul
Associate Professor
Research Interest:
Core Mining Discipline: Mine Safety
Engineering; Occupational Health,
Safety And Ergonomics; Applied
Multivariate Modeling And ML
Techniques; Rock Mechanics; Mine
Ventilation. Interdisciplinary:
Automation For Workplace Safety;
Socio-economic Impact Of Mining..



Prof. Rabindra Kumar Sinha
Associate Professor
Research Interest:
Design of Structures in Rock,
In situ Rock Mechanics
Investigations, Numerical
Modelling



**Prof. Vasanta Govind
Kumar Villuri**
Associate Professor
Research Interest:
Photogrammetry,
Cartography, Remote Sensing,
GIS And GPS



Prof. Radhakanta Koner
Associate Professor
Research Interest:
Mine Automation, Data Analytics,
Georesources Utilization Using
Remote Sensing Technology,
Slope Stability Analysis,
Landslide Analysis, Wireless
Sensing Technology, Real-time
Monitoring System In Mining

Faculty Profile of the Department



Prof. Patitapaban Sahu

Associate Professor

Research Interest:

Mine Ventilation, Sub-surface Environmental Engineering, Mine Radiation, CBM And Data Analytics In Mining



Prof. Gnananandh Budi

Assistant Professor

Research Interest:

Rock Mechanics And Ground Control



Prof. Kashinath Pal

Assistant Professor

Research Interest:

Rock Mechanics, Groundwater, Slope Stability



Prof. Mohammad Soyeb Alam

Assistant Professor

Research Interest:

Geospatial Technology In Mining, Underground Metal Mining, Mine Subsidence Studies, Mine Slope Stability Analysis, Mine Surveying

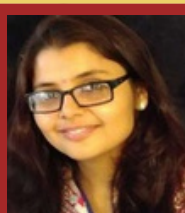


Prof. Siddhartha Agarwal

Assistant Professor

Research Interest:

Digitalization Of Mining Operations, Industry 4.0 Applications In Mining, Machine Learning And Artificial Intelligence Applications In Energy Consumption In Mines, Earth Sciences: Geostatistics, Open Pit Mine Planning & Scheduling, Real Time Monitoring Of Air Pollution In Open Cast Mines, Geo-technical And Environmental Closure And Repurposing Planning



Prof. Swapnil Mishra

Assistant Professor

Research Interest:

Blast Resistant Design of Underground Structures, In-situ Stresses Surrounding Underground Structures, Impact Testing on Weak and Weathered Rock Conditions, Ground Subsidence, Rock Dynamics and Material Testing, Physical Modelling



Prof. Ashok Kumar

Assistant Professor

Research Interest:

Underground Mining Methods, Strata/Rock Mechanics, Numerical Modeling, Underground Instrumentation And Monitoring Of Strata, Support Design, Rockmass Characterisation, Excavation Methods For Tunnels & Caverns, Drilling & Blasting, Operations Research, Mine Environment, Surface Mining



Prof. Dondapati Gopi Krishna

Assistant Professor

Research Interest:

Rock Mechanics, Numerical Modeling in Geotechnical Engineering, Coal Mining, Mine Instrumentation and Monitoring



Prof. Bhaskara Behera

Assistant Professor

Research Interest:

Rock Mechanics And Ground Control, Mining Methods, Numerical Methods In Geomechanics, Mine Planning And Design



Prof. Ajeet Yadav

Assistant Professor

Research Interest:

Rock Mechanics and Ground Control, Mining Methods, Mine Ventilation, Numerical Modelling



Prof. Ankush Galav

Assistant Professor

Research Interest:

Rock Mechanics and Ground Control, Mining Methods, Rock Excavation Engineering, Numerical Modelling, Mine Planning and Design, Mine Instrumentation and Monitoring

2025 CALENDAR

JANUARY

M	T	W	T	F	S	S
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FEBRUARY

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APRIL

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JULY

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AUGUST

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SEPTEMBER

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OCTOBER

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NOVEMBER

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DECEMBER

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2025 Calendar of Important Mining Days

4th April : International Day for Mine Awareness and Assistance in Mine Action

22nd April : World Earth Day

1st May : International Labour Day

4th May : Coal Miners Day

23rd June : International Women in Engineering Day

30th October : Mine Rescue Day

1st November : Coal India Foundation Day

1st November : Indian Mining Day

5th December : World Soil Day

11th December : International Mountain Day

14th December : National Energy Conservation Day