



IIT INDIAN INSTITUTE
OF TECHNOLOGY
ISM INDIAN SCHOOL OF MINES
DHANBAD

Department of Mining Engineering



THE MINING EDGE

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From HoD's Desk



Dear Readers,

At the outset, I extend my warmest wishes to each one of you for a happy, prosperous and successful New Year 2025.

Reflecting on the remarkable journey of the Department of Mining Engineering at IIT (ISM) Dhanbad, we take immense pride in the progress we have made, both in academics and research in the previous year. Our Department has continued to strengthen its position as a leader in mining education and innovation, with our cutting-edge research initiatives and state-of-the-art infrastructure. Hope, the New Year will be more rewarding in this endeavour.

The future of mining holds exciting possibilities, particularly in the areas of sustainable mining practices, automation, and digitalization. As we move forward, our Department is committed to equipping our students with the skills and knowledge necessary to tackle the challenges of the evolving mining landscape. With a focus on green technologies, responsible resource extraction, and application of AI and machine learning, we aim to shape the next generation mining engineers who will lead the way in addressing the industry's future needs.

We also take pride in our recent achievements, including ground-breaking research publications, successful student placements, and increased collaboration with industries and global academic institutions. Our faculty members continue to push the boundaries of knowledge, while our students showcase excellence both in academics and extracurricular activities.

Together, we are building a vibrant and dynamic community at IIT (ISM) Dhanbad, and I look forward to many successes that lie ahead for our Department. Let's continue to work towards achieving greater heights, fostering innovation, and contributing to the growth of the mining sector globally.

Best wishes for a fulfilling and successful 2025!

With kind regards,

D. P. Mishra



International Conference on Mine Ventilation and Environment for Green Mining MVEGM-2024 | 20-22 DECEMBER 2024 | PURI, ODISHA



Thanking Sponsors for their invaluable Support for the Conference



Inaugural Function of MVEGM-2024



Release of Souvenir of MVEGM-2024 in Inaugural Function



Department of Mining Engineering has successfully organized the International Conference on “Mine Ventilation and Environment for Green Mining (MVEGM-2024)” at Puri, Odisha during 20-22 December 2024. The mine ventilation, environmentalists, safety professionals, academicians, government, mine operators, consultants, and equipment manufacturers from around the world gathered and deliberated on the advances in mine ventilation, mine environmental monitoring and control, mine fires, explosions, mine rescue and recovery, coalbed methane, underground coal gasification, radiation problems in uranium mines, geothermal energy, mine waste management, applications of geomechanics and AI/ML in mine ventilation and environment, CO2 sequestration and reduction of carbon footprint, ventilation problems in deep mines, diesel issues in opencast and underground mines, ventilation and environmental aspects of tunnels and underground space, and many more allied areas for green mining. Overall, the outcomes of the conference will help in the improvement of the mine ventilation and environmental conditions for green mining.

“Sustainable Mine Ventilation**Eco-Friendly Mining**”**



**International Conference on
Mine Ventilation and Environment for Green Mining
MVEGM-2024 | 20-22 DECEMBER 2024 | PURI, ODISHA**

The inauguration ceremony marked the start of MVEGM-2024, featuring the luminaries namely, Prof. A. K. Mishra, Director, CSIR-CIMFR as the Chief Guest, Mr. Duncan Chalmers, Senior Lecturer, School of Mining Engineering, University of New South Wales, Sydney, Australia, Mr. Jagdish Arora, Director, (Project & Technical) & Director (HR) - Addl. Charge, National Aluminium Company Limited (NALCO) as the guests of honour along with Prof. Dheeraj Kumar, Deputy Director, IIT (ISM) Dhanbad, Prof. D. P. Mishra, HOD, Department of Mining Engineering and Chairman & Convener, MVEGM-2024, and Prof. P. Sahu, Co-Convener, MVEGM-2024 graced the occasion. The first day of the conference featured wonderful presentations and was concluded with a conference dinner, followed by the cultural program.



The second day culminated in a graceful closing ceremony, where our esteemed guests, including Prof. Sukumar Mishra, Director, IIT(ISM) Dhanbad, Chief Guest, Prof. D. C. Panigrahi, Former Director, IIT (ISM) Dhanbad, Mr. Amit Kumar Singh, Head, Corporate Affairs, Vedanta Limited, Prof. Sekhar Bhattacharyya, Associate Teaching Professor of Mining Engineering, The Pennsylvania State University, USA, Prof. Anindya Sinha, Professor of Practice, IIT (ISM) Dhanbad & Former Director (Technical) Northern Coalfields Limited as the Guests of Honour along with Prof. D. P. Mishra, HOD, Department of Mining Engineering and Chairman & Convener, MVEGM-2024, and Prof. Bhaskara Behera, Co-Convener, MVEGM-2024 graced the occasion. The recommendations of the Conference were presented by Prof. D. C. Panigrahi in the valedictory function. The day ended with a vibrant Musical Night & Gala Dinner. The final day i.e. 22 December 2024 concluded with the successful organization of the Technical and Sightseeing Tour.



**International Conference on
Mine Ventilation and Environment for Green Mining
MVEGM-2024 | 20-22 DECEMBER 2024 | PURI, ODISHA**

"Where Ideas Meet: Empowering Minds, Inspiring Futures"



**Four-Week Training Program on
Mine Surveying Techniques
Valedictory Program | 14 December 2024**



Seating (L to R) : S/Shri: Ashif Eqbal, Manish Kumar, Sudhanshu Pandey, Prof. V.G.K. Villuri (Coordinator), Prof. Dheeraj Kumar (Coordinator & Deputy Director), Prof. D. P. Mishra (HOD), Dr. Sunil Kumar, Amarjeet Kumar, Sanjay Kumar.

Standing (L to R) : S/Shri: Pawan Kumar Verma, Bikash Kumar Gupta, Paritosh Mehta, Shailendra Kumar Rajak, Suresh Pandit, Santosh Kumar Pandey, Ashish Kumar, Sourav Dey, Bhoopendra Kumar Vishwakarma, Satyendra Singh, Sk Arif Ahammed, Pratap Mondal, Satyendra Kumar Tiwari, Bishnupada Dey, Mithilesh Kumhar.

Standing (L to R) : S/Shri: Dinesh Kumar, Tony Kumar, Mithun Bal, Prakash Kumar Yadav, Vikas Kumar Mahato, Kilugu Sravan Kumar Reddy, Pradip Kumar, Akash Kumar Varma, Anand Tiwari, Mohit Tiwari, Prakash Jha, Niladri Mistry, Samiran Sarkar, Subhrajit Das, Neelendra Kumar Dahiya.

The Department of Mining Engineering has successfully organized the 4-week training program on “Mine Surveying Techniques” for the executives of Mahanadi Coalfields Limited and Bharat Coking Coal Limited during 18 November to 14 December 2024. The valedictory program of the training program was held on 14 December 2024. The event was graced by the presence of Prof. Dheeraj Kumar, Course Coordinator & Dy. Director, IIT (ISM) Dhanbad, Prof. D.P. Mishra, HOD, Department of Mining Engineering, Prof. V.G.K. Villuri, Course Co-Coordinator along with 32 participants from Mahanadi Coalfields Limited and Bharat Coking Coal Limited.

During the valedictory program, the dignitaries highlighted the importance of advanced surveying techniques in mining operations and applauded the participants for their commitment to learning. Certificates were distributed to the participants, marking the successful completion of the course. The event concluded with an inspiring message from the coordinators, encouraging participants to apply their knowledge to foster innovation and excellence in the mining industry.

"Surveying: The Art of Precision in the Science of Mining."



Mine Excursion



Exploring the World of Metal Mining: A Memorable Excursion

The B.Tech 2nd-year students of the Department of Mining Engineering, IIT (ISM) Dhanbad embarked on an insightful mining excursion to two mine sites: Narwapahar underground mine of Uranium Corporation of India Limited (UCIL), Jaduguda and Noamundi Iron Ore Mine of Tata Steel Ltd. during 8-12 December 2024 as a part of their academic excursion.

This field visit provided an opportunity for the students to observe diverse underground and surface mining operations. At UCIL, the students explored the intricate mining operations and beneficiation processes of uranium extraction from the ore in the beneficiation plant, and safety protocols critical to nuclear energy production. At Noamundi, they witnessed the large-scale operations involved in iron ore mining, including beneficiation and sustainable mining practices.

Beyond the technical aspects, the excursion offered insights into real-world challenges faced by the mining industry, such as environmental management, operational efficiency, and workforce safety. The students gained valuable knowledge and a deeper appreciation for the industry's vital role in driving technological and industrial advancements.

The Department of Mining Engineering extends heartfelt gratitude to the mine management of UCIL and Tata Steel for facilitating this excursion and for their warm hospitality, informative sessions, and unwavering commitment to excellence. The experience gained during the field visit truly enriched the students' understanding of mining and its significance in shaping the sustainable future of the country.

One-day Outreach Program
Application of Drones in Engineering
11 December 2024



In a bid to explore the immense potential of drone technology and its diverse applications, the Department of Mining Engineering, IIT (ISM) Dhanbad successfully hosted a one-day outreach program on “Application of Drones in Engineering” on 11 December 2024. The event was attended by 30 enthusiastic students from the Government Polytechnic College, Dhanbad, accompanied by two faculty members. The program was designed to provide hands-on exposure to drone technology, inspiring students to explore innovative solutions in the rapidly evolving tech landscape.

The event was inaugurated with an opening address by Prof. D.P. Mishra, HOD, Department of Mining Engineering, IIT (ISM) Dhanbad, who graced the occasion as the Guest of Honor. The program also saw a significant contribution from the Principal of Government Polytechnic College, whose support and encouragement were instrumental in making the outreach program a success.

The participants were predominantly from technical and engineering backgrounds. They were introduced to the basics of drone technology, its usage in industries such as mining, agriculture, and surveillance, and its growing significance in modern technological advancements. The session featured live demonstrations where students had the opportunity to interact with experts and gain hands-on experience in controlling drones.

The event also included a guided tour of the state-of-the-art laboratories of the Department of Mining Engineering, IIT (ISM) Dhanbad, where students were given insights into cutting-edge technology and advanced equipment used for real-world applications. This exposure to advanced technology was invaluable in broadening the student’s understanding of how drones are integrated into diverse fields, particularly in mining, where their use for aerial surveys and data collection is revolutionizing industrial practices.

Achievement



Congratulations to Prof. Patitapaban Sahu for joining the Editorial Board of the “Journal Publication of International Research for Engineering and Management”. This recognition highlights his expertise and contribution to the field of research.

Visit of Longwall Training Gallery by School Students



On 13 December 2024, a group of 80 students and teachers from Kendriya Vidyalaya School, Dhanbad, visited the Longwall Training Gallery of the Department of Mining Engineering, IIT (ISM) Dhanbad. This visit provided students with firsthand insights into the coal mining industry adapting longwall mining technology, enhancing their understanding of real-world applications and technological advancements in the sector. Accompanied by their dedicated teachers, the students got the opportunity to engage with experts and explore one of the most significant aspects of mining operations. This visit led to an enriching experience, fostering curiosity and learning beyond the classroom to the students.

Research Publications



1. **Paul, R. Mishra, S. (2024)** Securing Tunnels – Navigating the Interplay of Blast Loads and Seismic Effects in Global Infrastructure. 13th Asian Rock Mechanics Symposium “Advances in Rock Mechanics – Infrastructure Development”, 22nd– 27th September 2024, New Delhi, India.
2. **Dwivedi, A. Akashdeep. Paul, R. Mishra, S. (2024)** Discrete Element Modeling of Dump Slope Stability in Complex Geology. 13th Asian Rock Mechanics Symposium “Advances in Rock Mechanics Infrastructure Development”, 22nd – 27th September 2024, New Delhi, India.
3. **Paul, R. Mishra, S. (2024)** Seismic Slope Stability Assessment of Opencast Mines using Slide-2 Software. 8th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, 11-14 December 2024, IIT Guwahati, India.
4. **Paul, R. Mishra, S. (2024)** Assessing Seismic Resilience of Tunnels: A Practical Framework for Earthquake Prone Transport Networks. Indian Geotechnical Conference 2024, 19th – 21st December 2024, MIT, Chhatrapati Sambhajinagar, Maharashtra, India.
5. **Salunkhe, P. Mishra, S. Verma, S. (2024)** Factors Influencing Underwater Tunnel Construction: A Detailed Review. Indian Geotechnical Conference 2024, 19th – 21st December 2024, MIT, Chhatrapati Sambhajinagar, Maharashtra, India.

Sponsored Project

- **Prof. D.P. Mishra and Prof. Ankush Galav** have been awarded the project title “Technical Audit of the Block-E OCP (15MTY) of BCCL” by M/s Bharat Coking Coal Limited, Dhanbad.

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

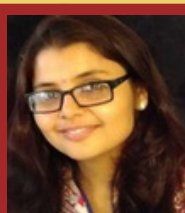


Prof. Siddhartha Agarwal

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 Gopai 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
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

FEBRUARY

M	T	W	T	F	S	S
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17	18	19	20	21	22	23
24	25	26	27	28		

MARCH

M	T	W	T	F	S	S
31					1	2
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24	25	26	27	28	29	30

APRIL

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21	22	23	24	25	26	27
28	29	30				

MAY

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12	13	14	15	16	17	18
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26	27	28	29	30	31	

JUNE

M	T	W	T	F	S	S
30						1
2	3	4	5	6	7	8
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23	24	25	26	27	28	29

JULY

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14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

AUGUST

M	T	W	T	F	S	S
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4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

SEPTEMBER

M	T	W	T	F	S	S
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22	23	24	25	26	27	28
29	30					

OCTOBER

M	T	W	T	F	S	S
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20	21	22	23	24	25	26
27	28	29	30	31		

NOVEMBER

M	T	W	T	F	S	S
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17	18	19	20	21	22	23
24	25	26	27	28	29	30

DECEMBER

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15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

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