



**IIT
ISM**

**INDIAN INSTITUTE
OF TECHNOLOGY
INDIAN SCHOOL OF MINES
DHANBAD**

Department of Mining Engineering



THE MINING EDGE

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From HoD's Desk



Dear Readers,

It is with great pride and enthusiasm, I present before you the April 2025 Edition of The Mining Edge, the monthly newsletter of the Department. This month was vibrant and impactful for the Department of Mining Engineering, in terms of academics, research, industry connect, and international engagement, reflecting our continued commitment towards excellence.

The Department took a significant step forward in fostering global academic collaboration through my recent visit to Moscow and Empress Catherine II, Saint Petersburg Mining University, Russia. The discussions on joint academic and research, student and faculty exchange programs, and exposure to their rich academic heritage reaffirmed our vision of becoming a globally connected institution.

The Department successfully organized a couple of executive development programs (EDPs) focused on mining technology and mine surveying practices for industry professionals from leading organizations, such as Coal India Limited and Caterpillar. These initiatives strengthen industry-institute interactions and underscore our role in bridging the gap between industrial practices and academic advancements.

Another major milestone of this month was the inauguration of the Continuously Operating Reference Station (CORS) under the Regional Centre of Geodesy of the Department. This facility will serve as a cornerstone for cutting-edge geospatial research and precision surveying, contributing significantly to the national scientific and industrial capabilities.

Furthermore, the outstanding performance of our students in the GATE 2025 examination is a testament to the quality of education and mentorship provided by our dedicated faculty. We are proud to see our students continuously strive for and achieve excellence.

As you explore this Edition, I hope you will be inspired by the achievements, initiatives, and future directions of the Department. Let us continue working together to elevate the quality of mining engineering education and research, and make meaningful contributions to the industry and society at large.

Best regards,
Prof. D. P. Mishra



Visit of Prof. D. P. Mishra to Russia

Prof. D. P. Mishra, HOD, Department of Mining Engineering, IIT (ISM) Dhanbad, participated in the 'Mining World Russia 2025' held in Moscow from 23–25 April 2025, along with a delegation of 40 representatives from the Indian mining industries and research organizations. As an invitee, he also attended the B2B meeting organized at the Indian Embassy in Moscow on 24 April 2025. The meeting was inaugurated by the Ambassador Extraordinary and Plenipotentiary of the Republic of India to the Russian Federation.



Participation in Mining World Russia 2025



Participation in Mining B2B Meeting held in Indian Embassy, Moscow



Further strengthening academic ties, Prof. Mishra visited the Empress Catherine II Saint Petersburg Mining University (SPMU) for a scheduled meeting with their Rector, Deans, and officials of UNESCO regarding student and faculty exchange, as well as joint research and Ph.D. programs under the ongoing collaboration between IIT (ISM) Dhanbad and SPMU. The visit has further solidified the IIT (ISM)'s international engagement with SPMU.



Visit of the Empress Catherine II Saint Petersburg Mining University (SPMU), Russia

During his visit to SPMU, Prof. Mishra explored the university's renowned Mining Museum, which houses historical artifacts, mineral collections, and exhibits showcasing advancements in mining technology and geology.

Prof. Mishra also toured the state-of-the-art lecture halls and research facilities, gaining insights into the university's academic infrastructure and pedagogical approaches in mining, geology, and engineering.





The visit underscores the importance of international academic cooperation in addressing global challenges in mining and resource development. Such interactions often pave the way for student/faculty exchange programs, collaborative publications, and innovation-driven partnerships.

This engagement aimed to solidify partnerships for future academic exchanges, joint research initiatives, and technological advancements in mining and engineering, aligning both institutions toward global sustainability goals. The partnership focused on addressing global resource challenges, fostering cross-border knowledge exchange, and driving sustainable progress in the mining sector.

आइआइटी आइएसएम : प्रो डीपी मिश्रा ने 'माइनिंग वर्ल्ड रशिया 2025' में भारतीय दल का किया नेतृत्व

धनबाद. आइआइटी आइएसएम के माइनिंग इंजीनियरिंग विभाग के प्रो डीपी मिश्रा ने 23 से 25 अप्रैल तक मास्को में आयोजित 'माइनिंग वर्ल्ड रशिया 2025' प्रदर्शनी में भाग लिया. इस अंतरराष्ट्रीय आयोजन में भारत के खनन उद्योगों व शोध संस्थानों से जुड़े 40 सदस्यीय प्रतिनिधिमंडल का नेतृत्व करते हुए प्रो. मिश्रा ने भारतीय खनन क्षेत्र की उपलब्धियों और नवाचारों को वैश्विक मंच पर प्रभावशाली ढंग से प्रस्तुत किया. उन्होंने 25 अप्रैल को मास्को स्थित भारतीय दूतावास में आयोजित बिजनेस-टू-बिजनेस बैठक में भी भाग लिया. इसमें भारतीय प्रतिनिधियों और अंतरराष्ट्रीय कंपनियों के बीच आपसी सहयोग बढ़ाने के विभिन्न



पहलुओं पर चर्चा हुई. प्रो मिश्रा ने सेंट पीटर्सबर्ग स्थित 'एसएस कैथरीन द्वितीय सेंट पीटर्सबर्ग माइनिंग यूनिवर्सिटी' का भी दौरा किया. वहां उन्होंने यूनिवर्सिटी के रेक्टर और डीन के साथ शैक्षणिक सहयोग बढ़ाने के लिए बैठक की. इस दौरान छात्र और शिक्षक विनिमय कार्यक्रम, संयुक्त शोध परियोजनाएं

और पीएचडी कार्यक्रमों को लेकर महत्वपूर्ण समझौते पर बातचीत हुई. बताया जा रहा है कि प्रो. मिश्रा के इस दौर से आइआइटी आइएसएम और एसपीएमयू के बीच अंतरराष्ट्रीय सहयोग और सुदृढ़ हुआ है. संस्थान के वैश्विक विस्तार में यह अहम कदम माना जा रहा है.



Six-Days Executive Development Program on “MINING TECHNOLOGY”



The Department of Mining Engineering organised a six-days Executive Development Program (EDP) on “Mining Technology” from 07-12 April 2025. The program included three days of mine site visits to Northern Coalfields Limited (NCL) and three days of classroom sessions at IIT(ISM) Dhanbad.

The program started with the onsite training of three days at the Nigahi and Jayant projects of NCL. Prof. Ankush Galav along with the NCL officials successfully conducted the field training of the participants. The participants were introduced to mining operations, and exposed to the field operations and maintenance of different mining machines.



After the field visit, the classroom sessions of the training program began with the inaugural ceremony at IIT(ISM) Dhanbad on 10 March 2025. The ceremony was graced by Prof. Dheeraj Kumar (Deputy Director, IIT(ISM) Dhanbad) along with Prof. N.C. Dey (Department of Mining Engineering, IEST Shibpur), Prof. D.P. Mishra (Course Coordinator & HOD, Mining Engineering, IIT (ISM) Dhanbad), Prof. Ankush Galav (Course Co-coordinator), and other faculty members of the Department. In the inaugural function, Prof. Dheeraj Kumar emphasized the contributions of IIT(ISM) Dhanbad in the mining sector. Prof. Mishra introduced the Department of Mining Engineering and highlighted the program's objectives, stressing the need for strengthening the industry-academia partnerships. Mr. Ravi Sambantham from Caterpillar shared his experience gained from the field visits and appraised the efforts of Prof. Ankush Galav for the successful completion of the visits. He also highlighted the importance of this training program and its demand among the Caterpillar executives.



The program was designed to equip Caterpillar executives with the fundamentals of mining technology, field operations, and maintenance of mining machinery. During the program, distinguished experts delivered insightful lectures on the fundamentals of mining technology along with the application and operating conditions of different mining machinery. The key experts were Prof. N.C. Dey (IEST Shibpur), Prof. A. Sinha (Professor of Practice, Department of Mining Engineering, IIT(ISM) Dhanbad), Prof. R.K. Sinha (Associate Professor, Department of Mining Engineering, IIT(ISM) Dhanbad), Prof. P. Sen (Rtd. Professor, IIT(ISM) Dhanbad), Prof. A.K. Mukhopadhyay (Rtd. Professor, IIT(ISM) Dhanbad), and Mr. S.C. Vishwakarma (Ex. General Manager, CIL), whose expertise provided valuable perspectives on mining technology.



The program provided an excellent platform for the Caterpillar executives to engage in knowledge exchange, and gain insights from onsite industry training, and classroom sessions. The training program was completed with the Valedictory function on 12 April 2025. In the valedictory function, all the participants shared their learning experiences and highlighted the importance of the course.



Six-Weeks Executive Development Program on “Advances in Mine Surveying Technology”



The Department of Mining Engineering organized a six-weeks training program on “Advances in Mine Surveying Technology” for the executives of Coal India Limited. The program started with the Inaugural function on 28 April 2025. The event was graced by the Chief Guest, Prof. Anindya Sinha (Professor of Practice, Department of Mining Engineering, IIT(ISM) Dhanbad), Prof. Dheeraj Kumar (Course Coordinator & Dy. Director, IIT (ISM) Dhanbad), Prof. D.P. Mishra (HOD, Department of Mining Engineering, IIT(ISM) Dhanbad), Prof. V.G.K. Villuri (Course Co-Coordinator), and Prof. Md. Soyeb Alam (Course Co-Coordinator). Total 82 participants from different subsidiaries of Coal India Limited participated in the training program.

During the Inaugural function, the dignitaries highlighted the course objectives, stressed upon the importance of advanced surveying techniques in mining operations, and encouraged the participants to apply the knowledge of advanced mine surveying techniques to foster innovation and excellence in the mining industry. The event was concluded with a vote of thanks by the course co-coordinator.

“Surveying: The Art of Precision in the Science of Mining.”



Inauguration of Continuously Operating Reference Station (CORS) under Regional Centre of Geodesy (RCG)



The Continuously Operating Reference Station (CORS) under the Regional Center for Geodesy (RCG)— an initiative aimed at enhancing geospatial accuracy and supporting advanced surveying, mapping, and scientific research across the region, funded by the Department of Science and Technology, Government of India, was inaugurated by Prof. Sukumar Mishra (Director, IIT (ISM) Dhanbad) on 15 April 2025. During the inauguration, Prof. Mishra emphasized the strategic significance of the CORS in strengthening the national capability in precision geodetic applications and appreciated the effort of the Department in this endeavor. Prof. Dheeraj Kumar (Advisor of the RCG & Dy. Director, IIT(ISM) Dhanbad), Prof. Sagar Pal (Dean, Research and Development, IIT (ISM) Dhanbad), Prof. D.P. Mishra (HoD, Mining Engineering, IIT (ISM) Dhanbad), Prof. S. Pasulpuleti (HoD, Civil Engineering, IIT (ISM) Dhanbad), Shri P. Pandey (Registrar, IIT (ISM) Dhanbad), and several other distinguished faculty members, technical officers and staff of the Institute graced this occasion.

Prof. Vansant Govind Villuri, Coordinator of the Regional Center for Geodesy, highlighted the broader impact of the initiative and informed that the establishment of this CORS will significantly enhance the national geodetic infrastructure by offering real-time, high-precision GNSS data. It will benefit a wide spectrum of users in the fields of surveying, engineering, navigation, and geosciences. The CORS data is set to revolutionize multiple scientific domains including upper atmospheric studies, meteorology and weather forecasting, tectonic and plate motion studies, seismology, and hydrology. By providing a common reference framework, the CORS network will improve coherence in geospatial data generated by various stakeholders and lead to enhance the productivity and efficiency across industries. The CORS infrastructure comprises a network of permanently installed GNSS receivers that continuously stream raw satellite data to a central server. This data is archived, processed, and made accessible through open, nonproprietary web standards — ensuring 24/7 availability throughout the year. With this initiative, IIT (ISM) Dhanbad takes a significant leap forward in advancing geospatial science and technology, contributing to both regional development and national scientific objectives.



Longwall Training Gallery Visit



The Department of Mining Engineering facilitated the visit of the executives of Caterpillar and Infosys to the Longwall Training Gallery Facility of the Department on 12 April 2025 and 24 April 2025, respectively. Under the guidance of Prof. Ankush Galav, Dr. Sunil Kumar, Mr. Sudhanshu Pandey, and Mr. Manish Kumar, the visitors received comprehensive knowledge about the longwall mining, a mass-production technology. These visits helped the participants in understanding the fundamentals of the longwall mining method. They were also introduced to the different installations in the longwall panel, such as shearer, armored face conveyor (AFC), stage loader, etc.



Signing of Memorandum of Understanding



A Memorandum of Understanding (MoU) was signed between the Department of Mining Engineering, IIT (ISM) Dhanbad and M/s Bhagwan Birsa Coal Briquetting Industry on 15th April 2025. This MoU mainly aims at undertaking collaborative R&D projects focussing on the coal dust utilization and minimizing environmental pollution due to coal dust in the mining industry.

GATE 2025 Achievers: A Moment of Pride



The Department of Mining Engineering takes immense pride in the remarkable performance of its students in the GATE 2025 examination. Our students have once again demonstrated their academic excellence, securing commendable ranks that reflect their perseverance, deep understanding of the discipline, and the high standard of education imparted by the Department. The Department extends heartfelt congratulations to all the achievers for their hard work, commitment, and dedication.

The accomplishment underscores IIT(ISM)'s legacy of producing industry-ready technocrats and sets a new benchmark for the aspiring engineers. Let us join in applauding all the achievers for their relentless efforts and inspiring their peers to aim higher. We will continue to celebrate such milestones achieved by our students that elevate the prestige of our Institution.



Research Publications, Projects, & Ph.D. Awarded



Research Publications



- **Chand K., Koner R. (2025)** Mine dump slope stability and failure behaviour analysis under geo-mining condition using hybrid numerical modelling. CURRENT SCIENCE, 128(7) DOI -10.18520/cs/v128/i7/667-676



Projects



- **Prof. Ankush Galav, Prof. Ajeet Yadav, Prof. B Behera** have been awarded a scientific study on method of working, Ultimate pit slope stability and dump slope and monitoring of slope stability for patch- A, Jogidih colliery as per Reg. 106(2) of CMR 2017 from M/s Bharat Coking Coal Limited, Dhanbad.



Ph.D. Awarded



Dr. Kapoor Chand, a full-time Research Scholar of the Department of Mining Engineering, has been awarded the Doctor of Philosophy (Ph.D.) degree under the supervision of **Prof. R. Koner** for his doctoral research titled "INTEGRATED APPROACH FOR OPEN-PIT MINE DUMP MANAGEMENT AND MONITORING".



Dr. Kadiyala Sudhakar, a part-time Research Scholar of the Department of Mining Engineering, has been awarded the Doctor of Philosophy (Ph.D.) degree under the supervision of **Prof. R.K. Sinha** for his doctoral research titled "SELECTION OF INSTRUMENTATION RANGES FOR DEFORMATION MEASUREMENT IN LARGE UNDERGROUND CAVERNS BASED ON PREDICTIVE ANALYSIS OF ROCK MASS BEHAVIOUR".



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. Partha Sarathi Paul
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. 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. 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



DEPARTMENT OF MINING ENGINEERING

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
		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
					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		

MARCH

M	T	W	T	F	S	S
31					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

APRIL

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				

MAY

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	

JUNE

M	T	W	T	F	S	S
30						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

JULY

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			

AUGUST

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

SEPTEMBER

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					

OCTOBER

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		

NOVEMBER

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

DECEMBER

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					

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

