



IIT
ISM INDIAN INSTITUTE
OF TECHNOLOGY
INDIAN SCHOOL OF MINES
DHANBAD

Department of Mining Engineering



THE MINING EDGE

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From HOD Desk



It gives me immense pleasure to present the 20th Volume (April, 2026) of The Mining Edge, the monthly newsletter of the Department of Mining Engineering, IIT (ISM) Dhanbad. This edition reflects the vibrant academic culture, research advancements, professional engagements, and collective accomplishments that continue to strengthen the legacy of our department as a centre of excellence in mining education, research, and technological innovation. Our faculty members and researchers actively participated in the prestigious InvenTiv R&D Fair organized under the aegis of the Ministry of Education, showcasing the department's commitment towards indigenous innovation, technological advancement, and industry-academia collaboration. Such engagements not only provide valuable exposure to contemporary developments but also reinforce our contribution towards national initiatives focused on self-reliance, sustainability, and technological growth.

The department also witnessed several achievements in the areas of sponsored research, consultancy, and scholarly publications. The successful acquisition of research and consultancy projects from reputed organizations reflects the trust and confidence placed in the expertise of our faculty members. These projects significantly contribute to addressing practical challenges associated with mine safety, rock mechanics, blasting technology, underground excavation, environmental sustainability, and geotechnical engineering.

I would also like to acknowledge the academic field visit undertaken by our research scholars to the Sevoke-Rangpo Rail Tunnel Project. Such field-oriented learning experiences are invaluable in bridging the gap between theoretical understanding and practical engineering applications, particularly in complex geological and underground excavation environments.

At this juncture, the department also expresses its sincere gratitude to Mr. Arup Kumar Mukherjee on his superannuation. His dedicated service, technical expertise, and unwavering commitment towards the department have been deeply appreciated by faculty members, staff, and students alike. We wish him a healthy, peaceful, and fulfilling retired life.

The achievements highlighted in this edition are the outcome of the collective dedication, sincerity, and collaborative spirit of our faculty members, technical staff, research scholars, and students. Their continued pursuit of academic excellence, innovation, discipline, and professional integrity remains the driving force behind the department's growth and recognition at national and international levels.

As we move forward, the Department of Mining Engineering shall continue to uphold its tradition of excellence while embracing innovation, sustainability, and interdisciplinary collaboration. I encourage our students and researchers to actively engage in technical activities, research endeavors, internships, and skill-development opportunities that will further enhance their academic and professional competencies.

I extend my sincere appreciation to the editorial team for their dedicated efforts in compiling this edition of The Mining Edge. I hope this newsletter continues to serve as a meaningful platform for knowledge sharing, professional engagement, and showcasing the achievements of our departmental community.

I wish all readers continued success in their academic and professional pursuits.

Warm regards,

Prof. B. S. Choudhary
Head of the Department
Department of Mining Engineering
IIT (ISM) Dhanbad

Ranked 21st globally, 1st in India, and within the top 100 in QS World University Rankings (Southern Asia)





Spotlight: Prof. Sudhir Kumar Singh Joins the Department



Prof. Sudhir Kumar Singh has recently joined the Department of Mining Engineering at Indian Institute of Technology (Indian School of Mines) Dhanbad as an Assistant Professor. He brings over three years of interdisciplinary experience spanning academia, research, and industry, with specialization in artificial intelligence, machine learning, and geotechnical engineering.

Prior to joining IIT (ISM) Dhanbad, Dr. Singh served in the Department of Computer Science and Artificial Intelligence at SR University, where he taught courses in Machine Learning, Natural Language Processing, Python for Data Science, and AI Ethics and Regulations. Alongside his academic responsibilities, he also held administrative positions including Assistant Dean (International Relations) and Coordinator of the International Affairs and Digital Design Branding Clubs.

He completed his B.Tech. in Mining Engineering in 2017 and earned his Ph.D. from Indian Institute of Technology Kharagpur in 2024. His doctoral research focused on the application of machine learning and deep learning techniques for slope stability analysis in opencast mines, with emphasis on predictive modeling frameworks using Convolutional Neural Networks and Variational Autoencoders. Dr. Singh has authored several research publications in reputed SCI-indexed journals, including Scientific Reports, International Journal of Refrigeration, Mining, Metallurgy & Exploration, and Archives of Mining Sciences. He has also contributed book chapters published by Springer and presented his research at several international conferences.

His research interests include artificial intelligence and machine learning for mining and geotechnical applications, IoT-enabled monitoring systems, digital twin technologies, slope stability modeling, mine automation, deep learning architectures, remote sensing and PSInSAR-based deformation analysis, computational geomechanics, and responsible and ethical applications of artificial intelligence in engineering systems.

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Departmental Participation in 'InvenTiv' R&D Fair

Faculty members of the Department of Mining Engineering, led by Prof. B. S. Choudhary, actively participated in InvenTiv, the flagship annual research and development exposition organized by the Ministry of Education. The event provided a significant platform for showcasing indigenous innovations, research excellence, and collaborative technological advancements aimed at strengthening India's research-to-industry ecosystem.



The faculty members enthusiastically engaged in technical discussions, exhibitions, and knowledge-sharing sessions with researchers, academicians, innovators, and industry experts representing premier institutions across the country. Their participation reflected the department's strong commitment to promoting innovation, technology transfer, and research-driven advancement in mining and allied disciplines.

The event was further enriched by the presence of Shir Santosh Gangwar, who attended the programme as the Chief Guest. His address underscored the significance of research, innovation, and industry-academia collaboration in achieving sustainable national development and inspired participants to contribute actively towards technological progress and self-reliance.



The programme also offered valuable exposure to emerging technologies and contemporary developments in sectors including healthcare, energy, manufacturing, digital technologies, mobility, and infrastructure. The participation of the Department of Mining Engineering in InvenTiv reaffirmed its dedication to national initiatives such as Make in India and Atmanirbhar Bharat, while fostering innovation-oriented and self-reliant growth for the nation.

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Retirement Felicitation Technical Superintendent Mr. Arup Kumar Mukherjee

Mr. Arup Kumar Mukherjee retired from service on 30 April 2026 after serving the Department of Mining Engineering with dedication, sincerity, and commitment over several years. On this occasion, he was felicitated by the Head of the Department, faculty members, and staff in recognition of his significant contributions and exemplary service to the department.



As a mark of appreciation and respect, mementos were presented to him in acknowledgement of his valuable association with the department. Mr. Mukherjee was closely involved with the Mine Ventilation Laboratory, where his technical expertise, practical insight, and meticulous approach played an important role in strengthening the laboratory's academic and operational activities. His contributions and professional commitment will be remembered with great regard by the department.

Throughout his tenure, Mr. Mukherjee made significant contributions towards the maintenance and smooth functioning of laboratory equipment and actively assisted in academic and practical sessions. He was known for his sincerity, dedication, and positive approach towards work, which contributed to a harmonious and supportive working environment. His calm disposition, cooperative nature, and unwavering commitment to excellence left a lasting impression on colleagues and students alike.

The Department of Mining Engineering expresses its heartfelt gratitude for his years of dedicated service and wishes him a healthy, happy, and fulfilling retired life. His experience, commitment, and warm presence will be fondly remembered and greatly missed by the department.



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Academic Field Visit to the Sevoke–Rangpo Rail Tunnel Project

A group of research scholars from the Department of Mining Engineering conducted an extensive academic and technical field visit to Tunnels T-1 to T-14 of the Sevoke–Rangpo Broad Gauge Rail Line Project between 6 and 10 April 2026. The visit formed an integral part of their ongoing research activities focused on underground excavation stability, rock mechanics, and seismic response analysis of tunnel environments in geologically sensitive Himalayan terrain.



The primary objective of the visit was to gain first-hand exposure to the complex geological conditions encountered during tunnel construction and to study the various tunnel support systems adopted in different lithological and structural settings. The scholars closely examined active excavation faces, rock mass behavior, support installation practices, and deformation control measures implemented in the ongoing tunnel sections. Special emphasis was placed on understanding the interaction between geological discontinuities, in-situ stress conditions, and support performance under dynamic loading environments.

Overall, the field visit offered the research scholars valuable practical exposure to modern tunnelling practices and advanced geotechnical investigation techniques employed in large-scale infrastructure projects. The experience significantly enhanced their understanding of underground construction challenges in difficult Himalayan geology and contributed meaningfully to their academic research in the areas of rock engineering, tunnel stability, and seismic hazard assessment.





Ph.D. Awarded & Student Achievement

Ph.D. Awarded



Mr. Geleta Warkisa Deressa (Admission No. 22DR276) successfully submitted his Ph.D. thesis entitled “Evaluation of Bench Blasting Effects on Slope Stability and Surface Miner Productivity through Numerical Modelling and Machine Learning Approaches” under the supervision of Prof. B.S. Choudhary. The research work focuses on the evaluation of bench blasting effects on slope stability and surface miner productivity through the application of advanced numerical modelling and machine learning approaches.

Student Achievement



Ms. Jyoti Jagajjita Raj, a final-year M.Tech student specializing in Tunnelling and Underground Space Technology, has successfully secured the position of ‘Geotechnical Engineer’ at GEOCONSULT India Pvt. Ltd.. This achievement reflects her strong academic background, technical competence, and dedication in the field of geotechnical and underground engineering.

Congratulations to Both of them!!

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Publications & Projects

Journal and Book Chapter

- **Deressa, Geleta Warkisa & Choudhary, Bhanwar. (2026).** Comparative evaluation of empirical and regression-based models for predicting blast-induced ground vibrations in Indian coal surface mines. Current Science. **130. 712-724. 10.18520/cs/v130/i8/712-724.**

Research & Consultancy Projects

- **Prof. Arka Jyoti Das, Prof. R. M. Bhattacharjee, and Prof. Partha Sarathi Paul** have been awarded a research project titled "Development of Innovative Extraction Method for Safer Extraction of Coal Seam by Underground Method with Higher Productivity and Percentage of Extraction using Continuous Mining System."
- **Prof. R. K. Sinha** has been awarded a consultancy project titled "Advice on Coal Extraction Feasibility in XVI-T Seam Concerning Longwall Parameters vis-à-vis Ground Control Aspects for D-19 Panel Onwards" sponsored by Bharat Coking Coal Limited.
- **Prof. Santosh Kumar Behera** has received a project titled "Scientific Study on Backfill Monitoring at IMFA Mahagiri Chromite Mine" sponsored by Indian Metals and Ferro Alloys Limited.
- **Prof. Dheeraj Kumar** has been awarded the project "Progressive Mine Closure Claim Certification of Dulanga Coal Mining Project" sponsored by Sainik Mining and Allied Services Limited.
- **Prof. Mohammad Soyeb Alam and Prof. R. K. Sinha** have received a project titled "Scientific Study and Preparation of Slope Stability Report for Saunda-D Coal Mine" sponsored by Saunda Mining Private Limited.
- **Prof. R.K. Sinha and Prof. Swapnil Mishra** have been awarded the consultancy project "Structural Assessment and Strengthening Recommendations for Dhobni ROB (ROB-14)" sponsored by Bharat Coking Coal Limited.
- **Prof. R. K. Sinha** has received project titled "Physico-Mechanical Testing of Core Samples of Moonidih XVI Seam" sponsored by Indukuri Mining Private Limited.
- **Prof. R. K. Sinha** has received project titled "Scientific Subsidence Assessment for Chinakuri Underground Mines with Special Focus on Workings Beneath the Damodar River" sponsored by Innovative Mining Projects Private Limited.
- **Prof. R. K. Sinha** has received project titled "Scientific Study on Surface Stabilization for Underground Mines of Jamadoba Group of Mines" sponsored by Tata Steel Limited.
- **Prof. B. S. Choudhary** has been awarded a project titled "Scientific Study for Designing Deep Hole-Controlled Blasting in Kenduadih Colliery (Phase-IV)" sponsored by Bharat Coking Coal Limited in accordance with the provisions of the Coal Mines Regulations, 2017.
- **Prof. B. S. Choudhary, Prof. R. K. Sinha, and Prof. Santosh Kumar Behera** have jointly received a project titled "Feasibility Study for Development of an Underground Mine at Quarry-F (Band-IV) of South Kaliapani Chromite Mine" sponsored by Odisha Mining Corporation Limited.

DEPARTMENT OF MINING ENGINEERING

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. 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



Prof. Patitapaban Sahu
Associate Professor

Research Interest:
Mine Ventilation, Sub-Surface
Environmental
Engineering, Mine
Radiation, CBM and Data
Analytics In Mining



DEPARTMENT OF MINING ENGINEERING

Faculty Profile of the Department



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, Geotechnical 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



Prof. Santosh Kumar Behera
Assistant Professor

Research Interest:
Paste backfilling, underground metal mining, underground metal mine backfilling, underground coal mine stowing and associated mining methods, fly ash filling in open cast mines, and slope stability.



Prof. Maitreya Mohan Sahoo
Assistant Professor

Research Interest:
Remote Sensing, Geographical Information System, Geoinformatics, Digital Image Processing, Geological Spectroscopy, Hyperspectral Mixing and Unmixing, Super-Resolution, Digital Twin Technology, Artificial Intelligence



**DEPARTMENT OF
MINING ENGINEERING****Faculty Profile of the Department**

Prof. Satish Kumar Sinha
Visiting Professor

Research Interest:

Environmental Sustainability,
Six Sigma in Mining, Mine
Surveying, Risk & Safety
Management



Prof. Arka Jyoti Das
Assistant Professor

Research Interest:

Mining methods, mine design,
rock mechanics, geomechanics,
stability analysis, ground
control, and geotechnical
monitoring.



Prof. Sudhir Kumar Singh
Assistant Professor

Research Interest:

Artificial Intelligence & Machine
Learning for Mining &
Geotechnical Applications,
Slope Stability Modelling



2026 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
30	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

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
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					

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
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

SEPTEMBER

M	T	W	T	F	S	S
	1	2	3	4	5	6
5	8	9	10	11	12	13
14	15	16	17	18	19	21
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
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

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	31			

2026 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

9th December : Foundation Day

11th December : International Mountain Day

14th December : National Energy Conservation Day

