Curriculum Vitae

Personal information

Name	Dr. Bhaskara Behera, Assistant Professor
Address	Department of Mining Engineering, Faculty Room 26, IIT (ISM) Dhanbad
Mobile	+91-6372685665
E-mail	bhaskara@iitism.ac.in, bhaskarabehera92@gmail.com
Nationality	Indian
Gender	Male

Education

Dates	July 2015- June 2022
Title of qualification awarded	**PhD, "Rock Mechanics and Ground Control". CGPA: 9.6/10** **Thesis: Optimization of Face Length for Longwall Workings in Indian Geo-mining Conditions.**
Principal subjects	Rock Mechanics Principles, Applied Rock Mechanics in Design, Underground Mining Methods, Mine Planning and Design, Rock Mechanics Lab
Name of the organization	Department of Mining Engineering, **Indian Institute of Technology (B.H.U) Varanasi, India**
Dates	July 2014 - May 2015
Title of qualification awarded	**Masters in "Mine Environment". CGPA: 9.05/10** **Thesis: Assessment of Spontaneous Heating Susceptibility of Indian Coals by Experimental Techniques**
Principal subjects	Mining of Deep-Seated Deposits, Mine Fire and Spontaneous Heating, Mine Management, Advanced Solid Fuel Technology, Solid Fuel Technology Lab
Name of the organization	Department of Mining Engineering, **National Institute of Technology Rourkela**, **India**
Dates	July 2010 – May 2014
Title of qualification awarded	**Bachelor of Technology in "Mining Engineering", *Consistently topped in the Rock Mechanics and Rock Engineering, Mining Methods and Mine Planning related courses*.**
Principal subjects	Engineering Mechanics, Mechanics of Solids, Basic Surveying, Basic Electrical Engineering, Basic Electronics,Operation Research, Numerical Methods in Engineering, Underground Coal Mining, Geo- mechanics, Underground Metal Mining, Opencast Mining, Geo-mechanics Lab
Name of the organization	Department of Mining Engineering, **National Institute of Technology Rourkela, India**

Teaching interests

Rock Mechanics
Underground Coal Mining
Underground Metal Mining
Design of Slopes
Numerical Methods in Geotechnical Engineering
Mine Planning and Design

Research interests

Rock Mechanics and Ground Control
Numerical modeling in geomechanics
Characterization of Rock Mass
Underground Mining Methods
Mine Planning and Design

Publications: Journal Publications

1. Yadav A., **Behera B.,** Singh G.S.P and Sharma S.K. (2024) Numerical Modelling Study of the Post-Failure Behavior of Coal Specimens. Journal of Rock Mechanics and Geotechnical Engineering, 16, 2; 514-531. (SCI, Q1-Indexed, Impact Factor: 9.40)
2. Yadav A., Singh G.S.P and **Behera B.,** (2023) A machine learning model for evaluation of chain pillar stability in deep longwall workings in India. Mining, Metallurgy and Exploration, 40, 2119-2137. (SCI, Q3-Indexed (*Q2 indexed during the time of publication*), Impact Factor: 1.50)
3. **Behera B.,** Yadav A., Singh G.S.P and Sharma S.K. (2021) Assessment of excavation damage and spalling potential at a mechanized longwall face: a numerical modelling study. Geomechanics and Geophysics for Geo-energy and Geo-resources, 7, 104; 1-40. (SCIE, Q1-Indexed, Impact Factor: 3.90)
4. Naik A.S., **Behera B.,** Shukla U.K. et al. (2021) Mineralogical studies of mahanadi basin coals based on FTIR, XRD and Microscopy: a geological perspective. Journal of Geological Society of India, 97, 1019-1027. (SCI, Q3-Indexed, Impact Factor: 1.46)
5. **Behera B.,** Yadav A., Singh G.S.P and Sharma S.K. (2020) Numerical modelling study of the geo-mechanical response of strata in longwall operations with particular reference to Indian geo-mining conditions. Rock Mechanics and Rock Engineering, 53; 1827-56. (SCI, Q1-Indexed, Impact Factor: 5.50)
6. **Behera B.,** Yadav A., Singh G.S.P and Sharma S.K. (2020) A numerical modelling approach for evaluation of spalling associated face instability in longwall workings under massive sandstone roof. Engineering Failure Analysis, 117, 104927. (SCI, Q1-Indexed, Impact Factor: 4.4)
7. Yadav A., **Behera B.,** Singh G.S.P and Sharma S.K. (2020) An approach for numerical modelling of gob compaction process in longwall mining. Mining, Metallurgy and Exploration, 37, 631-649. (SCIE, Q3-Indexed (*Q2 indexed during the time of publication*) Impact Factor: 1.50)
8. **Behera B.,** Yadav A., Singh G.S.P and Sharma S.K. (2020) Design of an optimum longwall face for improved ground control: a Review. J. Inst. Engg. Ser D, 101, 151-164. (Scopus)
9. Yadav A., **Behera B.,** Singh G.S.P and Sharma S.K. (2020) Numerical analysis of the gob stress distribution using a modified elastic model as the gob constitutive model. J. Inst. Engg. Ser D, 101, 127-139. (Scopus)
10. Sahoo S.K., **Behera B.,** Yadav A., Singh G.S.P. and Sharma S.K. (2020) Plain-strain modeling of progressive goaf compaction in a depillaring working. J. Inst. Engg. Ser D, 101, 233-245. (Scopus)
11. **Behera B.** and Sahu H.B. (2018) Assessment of auto-oxidation potential of some Indian coals by differential thermal analysis (DTA) technique. Journal of Mines, Metals and Fuels, June-July-18, 347-62. (Scopus)

12. **Behera B.** and Sahu H.B. (2017) Experimental evaluation of susceptibility to spontaneous heating of some Indian coals. Minetech-2017.

Conference Publications

13. **Behera, B.**, Singh, G.S.P. & Sharma S.K. Understanding the Mechanism of Longwall Face Spalling: Field Observation and Numerical Modelling Study. In Proceedings: International Conference on Safe, Smart and Sustainable Mining, 16-18 December 2023, Goa.
14. Kumar, A., Kumar, R., Ray, S., Pandit, B., Mishra, S., **Behera, B**., Kumar, D., Ram, S. Assessment of chimney crown failure during tunnelling in the Himalayan region. In Proceedings: International Conference on Safe, Smart and Sustainable Mining, 16-18 December 2023, Goa.
15. Yadav A., **Behera B.,** Sahoo S.K., Singh G.S.P. and Sharma S.K. (2020) Performance evaluation of potential constitutive models for simulation of longwall goaf compaction using modulus updating technique. Recent practices and advancement in mineral industry, VNIT, Nagpur, 21-22 February, 2020.
16. Prajapati S.K., Yadav A**., Behera B.,** Sahoo S.K., Singh G.S.P. and Sharma S.K. (2020) An innovative methodology for improved simulation of goaf compaction in longwall workings using FLAC3D. Fifth International Itasca Symposium, February 17-20, Vienna, Austria, 2020.
17. Naik A.S. and **Behera B.** (2019) Mineralogical studies of Mahanadi Basin coals based on FTIR, XRD and Microscopy: Implications for industrial utilization. Recent Trends in Earth Sciences Research, Banaras Hindu University , 2019.
18. **Behera B.,** Singh G.S.P. and Sharma S.K. (2017) Understanding longwall geo-mechanics for improved planning and designing of longwall working- a review. Sustainable Mining Practices-2017, NIT Rourkela, Rourkela, Odisha.
19. Sahoo S.K., Galav A., **Behera B.,** Singh G.S.P. and Sharma S.K. (2016) Strata control monitoring in a contiguous seam depillaring working. Recent Advances in Rock Engineering, 2016 (RARE-2016)
20. **Behera B.,** and Sahu H.B. (2014) Evaluation of spontaneous heating susceptibility of some Indian coals by experimental techniques- a comparative study. All India Seminar on Mining-Recent Advances, Challenges and Scenario Beyond, NIT Rourkela, 2014.

Journal Article (Under Consideration/Preparation)

21. Bisoyi S.K., Khatti J., Fissha Y., **Behera B**., Pal B.K., Sazid M (2025) Assessment of Blast-Induced Ground Vibrations using Hybrid Artificial Neural Network Models: An Investigation for Dongri-Buzurg Mine in Bhandara, Maharashtra, India. (Communicated to Natural Resources Research, Springer, Q1-Indexed, Impact Factor: 4.8, ***Status: Under Revision***)
22. Behera B., Yadav A., Singh G.S.P and Sharma S.K. Three-Dimensional Investigation of the Strata Mechanics and Face Damage Characteristics of Longwall Workings in Indian Geo-

Mining Conditions. (Article Under Preparation)

Teaching experience

2024-Present: **Advanced Underground Mining Methods** (8th Semester B.Tech./Dual Degree Students, Received Feedback in tune of **9.50/10.00** given by **46 students** for the Academic Year 2023-2024)

2024-Present: **Mining, Energy, and Climate Change** (Open Elective Course, Received Feedback in the tune of **8.82/10.00** given by **136 students** for the Academic Year 2023-2024)

2024-Present: Open Pit Slope Analysis and Design (7th Semester B.Tech./Dual Degree Students, Received Feedback in tune of **8.91/10.00** given by **97 students** for the Academic Year 2024-2025)

2024-Present: Analysis and Design of Slopes (1st Semester M.Tech. Students, Received Feedback in tune of **8.70/10.00** given by **38 students** for the Academic Year 2024-2025)

Research experience

Ongoing/Submitted Research Project:

1. PI of the project titled "**Rational design of Longwall workings under High depth of Cover**" submitted under Faculty research Scheme of the institute. Project No.: FRS (192)/2023-24/ME. Cost: 20.00 lakhs. **Status: Ongoing**.
2. Submitted a proposal as one of the PIs of an Institute Mega Project titled "**Numerical Modelling of Ground deformation due to the UCG Process through a coupled Thermo-Hydro-Mechanical-Chemical Model**". **Status: Accepted for Evaluation**.
3. Submitted a project proposal as Co-PI for funding from Tata Steel titled "**Feasibility of CO2 sequestration in deep un-mineable coal seams following underground coal gasification (UCG)**". **Status: Accepted for evaluation**
4. A project proposal is under preparation for submission to the CIL R&D Board.

Completed Research Project

1. **Damage Mitigation Strategies of Buried Structures in Different Geological Media under Propagation of Blast Waves from Near Field Explosions**. *Funded by:* Defense Research and Development Organization (D.R.D.O), Government of India (As *Research Associate, IIT Kanpur, March 2023-October 2023*).

Work experience

a. Academic Experience

Dates	October 2023- Present
Occupation or position held	**Assistant Professor**
Main activities and responsibilities	Teaching and Research
Name and address of employer	Department of Mining Engineering, Indian Institute of Technology (ISM) Dhanbad

Dates	March 2023- October 2023
Occupation or position held	**Post-doctoral Research Associate**
Main activities and responsibilities	Conducting research related to rock mechanics (Analytical and Numerical Modelling of Tunnels Subjected to Static and Dynamic Loadings)
Name and address of employer	**Indian Institute of Technology Kanpur**

Dates	July 2022- March 2023
Occupation or position held	**Guest Faculty**
Main activities and responsibilities	Teaching and Research
Name and address of employer	**Government College of Engineering Keonjhar**, Odisha, India, 758002

b. Administrative Experience

1. Member of scrutiny committee of application for M.Tech. admission.
2. Member of scrutiny committee of application for Ph.D. admission.
3. Departmental representative for the NEP implementation program to undergraduate studies.
4. Member of the Departmental Grievance Redressal Committee
5. Member of the Departmental Space Allocation Committee
6. Faculty in Charge of the Computer Aided Mine Planning and Design Laboratory (CAMPAD Lab.)
7. Member of the Department Undergraduate Committee (DUGC)
8. Member of Viva-Voce Committee for the evaluation of B.Tech. projects of B.Tech. Programme, 7th Semester, Session 2024-25.
9. Co-Convener of the International Conference on "Mine Ventilation and Environment for Green Mining (MVEGM-2024)" scheduled during 20-22 December at Puri, Odisha.
10. Regularly participate in the DAC meetings and provide input for the welfare of the department and the institute overall.

c. Additional Assignments

1. Indenter for purchasing various infrastructural requirements at the CAMPAD Lab.
2. Actively involved in various purchase, recruitment and administrative activities of the department in different capacities.
3. Organizing Member of Department's Annual Geo-mining fest 'Khanan 2024'.
4. Invigilator for junior assistant examination at the institute level.
5. Prepared question papers and invigilator for the BCCL Examination conducted by the Institute.
6. Nominated from the department to attend a one-day seminar on "Challenges and Opportunities in Mineral Sector", New Delhi, 08 August 2024.

d. Academic activities outside the institute

1. Prepared question papers for the Junior Mining Officer (JMO) Examination-2024 conducted by the Odisha Public Service Commission, Odisha.
2. Presently serving as the DSC member of Mr. Sanganabasav Sthavarmath, full-time Ph.D. candidate in the School of Civil Engineering, Vellore Insititute of Technology (V.I.T), Vellore-632014, Tamil Nadu, India.

Industry-Sponsored Consultancy Projects

Sl no.	Project Title	Industry	Responsibility	Status
1	Scientific study for feasible Coal extraction in XVI bottom seam with no adverse impact of subsidence on the surface above Northwest property and Design of support system for Gate Roadways, Installation Chamber, Salvaging Chamber and Strata Monitoring Instrumentation Plan in XVI(B) Seam of Moonidih Colliery and design of longwall panels D-14 C & D-14 D in XVI Top seam of Moonidih Colliery with no adverse impact of subsidence on the surface.	Coal Company: BCCL Mine: Moonidih Colliery Project Cost: 29,97,200/- Consultancy No: **CONS/7267/2024-25**	**CI: Prof. Bhaskara Behera** Co-CI: Prof. Ajeet Yadav Mining Engineering	Ongoing
2	Three-Dimensional Subsidence Study of Patal East (Eastern Part) Coal Block	RCR Steel Works Pvt. Ltd. Project Cost: 14,16,000/- Consultancy No: **CONS 7336 C**	CI: Prof. Ajeet Yadav **Co-CI: Prof. Bhaskara Behera** Co-CI: Prof. Ankush Galav Mining Engineering	Ongoing

3	Scientific assessment of old and dangerous workings of BCCL mines	Coal Company: BCCL Project Cost: 1,47,50,000/- Consultancy No: **CONS 7354 C**	CI: Prof. D.P. Mishra Co-CI: Prof. V.G.K. Villuri **Co-CI: Prof. Bhaskara Behera** Mining Engineering	Ongoing
4	Scientific study for development under NH-19 national highway at Dishergarh (R-IV) seam at Ningah Colliery	Coal Company: ECL Mine: Ningah Colliery	**CI: Prof. Bhaskara Behera** Co-CI: Prof. Ajeet Yadav Mining Engineering	Awarded

Patent (Filed/Awarded)

A System to Detect and Classify Severity of Face Damage in Longwall Mining
Application No: 202311055546
Status: Published/ Under Revision for Granting

Ph.D./M.Tech. Guidance

(i) Guiding Four Part-time PhD Scholars, whose details are given below

Sl no	Name of the Scholar	Admission No.
1	Mr. Jyoti Krishna Palo	24DP0006
2	Mr. Satya Prakash Naik	24DP0011
3	Mr. Siba Prasad Panigrahi	24DP0013
4	Mr. Pritam Kumar Sinha	24DP0210

(ii) Guiding Five M.Tech. students, whose details are given below

Sl no	Name of the Scholar	Admission No.
1	Mr. Ashish Ranjan Kumar	23MT0077
2	Mr. Akhil Mishra	23MT0033
3	Mr Janganolla Rajesh Goud	24MT0339
4	Mr Tushar Kanti Mahato	24MT0482
5	Mr Purusottam Mahato	24MT0323

Books and Proceedings

1. Co-Editor of the Proceeding titled “Mine Ventilation and Environment for Green Mining”, IIT (ISM) Dhanbad, 2024.

Committee Member of the Ph.D. Dissertation

1. DSC Member of Mr. Ajay Chokhani (Admission No. 23DP0015)
2. DSC Member of Mr. Ujjwal Abhishek (Admission No. 24DP0015)
3. DSC Member of Mr. Abhaydeep Singh Gaur (Admission No. 23DP0040)
4. DSC Member of Mr. Sandeep Kumar (Admission No. 24DP0042)
5. DSC Member of Mr. Soumya Prakash Tripathy (Admission No. 24DP0213)

Personal Skill and Competency

Mother language(s) Odia

Other language(s) English, Hindi

Social skills and competences Good ability to adapt to multicultural environments gained through my work.

Technical skills and competences High-level knowledge in the field of “Rock Engineering and Underground Structure Design”.

Capable of setting up and maintaining laboratory test equipment related to rock mechanics.

Capable of undertaking numerical simulations of complex geotechnical problems.

Computer skills and competencies

Proficient with finite difference codes: **FLAC 2D** and **FLAC 3D**.

Intermediate user in **ANSYS-AUTODYN**

Intermediate user in **LS-DYNA**

Intermediate user of **Rocscience Packages**

Advanced level in **Microsoft Office** (Word, Excel, PowerPoint).

Beginner level in distinct element codes: **UDEC** and **3DEC**

Intermediate user of **SURPAC**

Beginner level user of **Python and Related Applications**

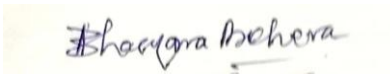
Additional information

Review Work

- Geosystems and Geoenvironment, Elsevier
- Scientific Reports, Springer
- Geomechanics and Geophysics for Geo-energy and Geo-resources, Springer
- Heliyon, Elsevier

Honours and Awards:

- Young Researcher Award at MRACS-2014, NIT Rourkela
- Awarded First position in Geobotics competition at MINARE-14, NIT Rourkela
- MHRD scholarship for doctoral studies



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