



2ND EDITION



CIVIL ENGINEERING CHRONICLE

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
BIRLA INSTITUTE OF TECHNOLOGY MESRA

—
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MESSAGE FROM VC



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It gives me immense pleasure to hear that the Department of Civil Engineering has decided to publish Departmental Newsletter. This newsletter will surely provide a platform to disseminate relevant information about the progress in academic, research, and related matters regularly to the concerned community, including faculty and staff members, students and scholars, entrepreneurs, recruiters, industry, and alumni. It will also work as a stimulus to encourage the Department to network with other departments in all major academic and research organizations and industries.

The Civil Engineering Department of BIT Mesra is one of the best departments in this domain in the country. The Department is always enthusiastic about conducting various courses and workshops for the faculty and students and training programs for working professionals to inform the community about technological advances.

Finally, I wish to give my best compliments to the Team Constituent for publishing the Newsletter.

Dr. Indranil Manna

Vice Chancellor, BIT Mesra

MESSAGE FROM HOD



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It is with great pleasure and satisfaction that the Civil Engineering Department presents the inaugural issue of our departmental Newsletter, "Civil Engineering Chronicle". I am confident that this newsletter will serve as a platform through which the comprehensive profile of our academic and co-curricular activities, achievements, and progress made during the stipulated period can be perused.

Through this medium, we aim to showcase the significant events within our department, providing insight into our advancements. This will reflect on our department's current progress and inspire us to continually strive for improvement with each passing quarter. Anticipating the opportunities and challenges ahead, we, as a department, remain dedicated to advancing our research, supporting our students, and contributing to the broader scientific and engineering community. With our collective expertise, dedication, and hard work, I am confident that we will continue to achieve remarkable milestones in the days to come.

I extend my gratitude for your ongoing commitment and eagerly look forward to collaborating with each one of you to shape a bright future for our Civil Engineering Department.

Dr. Bindhu Lal

Head of Department
Civil and Environmental Engineering

EDITOR'S DESK



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For a considerable period, there has been a recognized need to establish a departmental newsletter serving as a conduit to showcase the achievements and diverse scholarly endeavors within the Civil Engineering Department."

A dedicated editorial team has meticulously contributed time and expertise to bring forth this inaugural issue. Special gratitude is extended to all faculty members, the driving force behind this initiative. "Civil Engineering Chronicle" aims to spotlight significant developments, including innovations in teaching, research contributions, project developments, outreach activities, workshops, and student achievements.

Through vibrant visuals, it seeks to foster information sharing, break down silos, and cultivate a culture of record-keeping, propelling the Civil Engineering Department towards sustained success.

Dr. Ashish Kumar Patnaik

Editor
Assistant Professor, Dept. of CEE

EDITORIAL TEAM

EDITOR



DR. ASHISH KUMAR PATNAIK

STUDENT EDITORS



SOAMYA PARASHAR



HARSHVARDHAN SUMAN



HARSHIT BAJAJ

STUDENT SUB- EDITORS

Sumit Kumar, Richik Kumar, Abhijeet Dutta, Vaibhav Bahal, Abhinav Kumar, Rounak Kumar, Shivangi Hembrom, Udit Raj, Rishabh Choudhary

ABOUT THE DEPARTMENT

The Department of Civil Engineering was established in 1957, later in 2014, it was renamed as Department of Civil and Environmental Engineering. Being one of the Oldest and largest department of the institute, its mission is to develop professional skills through quality education & research with the well established laboratories furnished with promising equipments. The department has also contributed towards the infrastructural and industrial growth of the country.

The vision is to develop quality intellectuals through education, research and motivation, so that they can contribute towards the building of a better society via their expertise in civil & environmental engineering.

The department offers 4-year B. Tech.(civil) and 2-year M. Tech. (civil) degree in 3 specializations: Structural Engineering, Soil Mechanics and Foundation engineering, Environmental Science and Engineering. The program objectives and program outcomes are based on CBCS. We also have collaboration via MOU with National Highway Authority of India(NHAI) and Jharkhand state pollution control board (JSPC).

We have 17 well qualified and highly experienced faculty members who are actively involved in teaching, research and consultancy. The current areas of research includes Air Pollution, Concrete Structures, Geotechnical engineering, mine slope stability, soil Stabilisation, Wastewater Management, Transportation Engg. etc.

VISION AND MISSION OF DEPARTMENT

VISION

To develop quality intellectuals through education, research and motivation, so that they can bring a positive contribution to society, in areas of Civil & Environmental Engineering.

MISSION

- To develop professional skills through quality education & research.
- To outreach various sectors of society through interdisciplinary programmes and practical oriented approach.
- To create dynamic, logical and effective leaders with inspiring mindsets.

>>> FACULTY MEMBERS



Our esteemed professors play a pivotal role in shaping the success and growth of our Civil Engineering Department. Their unwavering commitment to excellence is reflected in their profound contributions to both academia and industry. Beyond the classroom, their impactful research endeavors push the boundaries of innovation, addressing real-world challenges in infrastructure, construction, and sustainable development.

The professors' engagement with industry partnerships and collaborative projects further enhance the department's standing, fostering a dynamic learning environment. Their passion for advancing the field and cultivating a culture of curiosity and exploration is integral to the department's continuous progress and the overall development of aspiring civil engineers.

DEPARTMENTAL ACTIVITIES

»»» NBA ASSESSMENT

The peer team members of the National Board of Accreditation (NBA) visited the Dept. of Civil 15th to the 17th of April, 2023 to conduct an assessment and accreditation.

»»» SKILL DEVELOPMENT PROGRAM

A skill development program was organised by the department for enhancing the skill-sets of the undergraduates in different fields which will be beneficial for students in the future.



»» COURSES OFFERED

The department offers the following courses –

- - Airport and Harbour engineering
- - Bridge and Tunnel engineering
- - Construction, Estimation and Planning
- - Concrete structure
- - CAAD
- - Geotechnical engineering
- - Pre stressed concrete
- - Disaster management
- - Structural engineering
- - Reinforced Concrete
- - Surveying
- - Remote Sensing in civil engineering
- - Railway engineering
- - Steel Structure
- - Environmental engineering
- - Water Resource engineering
- - Dam and Water bodies
- - Earthquakes and Disaster Management
- - Building Materials and Construction
- - Transportation Engineering

»» LABORATORIES AND FACILITIES

The Department of Civil Engineering has well-equipped laboratories to carry out effective research in various specializations.

The Department has the following laboratories:

- Hydraulics Laboratory
- Structural engineering laboratory
- Environmental engineering laboratory
- CAAD Laboratory
- Concrete and Road material laboratory
- Advanced Instrumentation laboratory
- Surveying Field Work Laboratory

The department's advanced Instruments Laboratory is being developed, which now houses FTIR Microscope (Thermo Fisher Scientific) and Atomic Absorption Spectrophotometer (Perkin Elmer). FTIR Microscope (Thermo Fisher Scientific), procured from DST-FIST Grant in 2024 is used for microscopic imaging and chemical analysis simultaneously for various organic materials.

Atomic Absorption Spectrophotometer (Perkin Elmer) is a high end equipment used for elemental analysis from various environmental samples.

»»MAJOR EQUIPMENTS INSTALLED



Atomic Absorption Spectrometer



Flame Photometer



Bitumen Compactor



FTIR Microscope



Triaxial Apparatus

»»» PUBLICATIONS IN JOURNALS

- Majumdar, A., Avishek, K.(2024) Assessing heavy metal and physiochemical pollution load of Danro River and its management using floating bed remediation. *Sci Rep* 14, 9885.
- Lakra, K., Avishek, K.(2024) Influence of meteorological variables and air pollutants on fog/smog formation in seven major cities of Indo-Gangetic Plain. *Environ Monit Assess* 196, 533.
- Pandey, S. and Kumari, N., (2024). Assessment of Morphology and Soil Erosion Risk in Agrarian Watershed of Jharkhand India Using RUSLE, GIS and MCDA-AHP. *Journal of the Indian Society of Remote Sensing*, pp.1-20.
- Neeta Kumari, Susmita Marandi, Soumya Pandey (2024) "Fluoride removal from groundwater using fish scales derived biochar", *Materials Today: Proceedings*, (in the press, available online)
- Shreya Nandi, R. Naresh Kumar, Abishek Dhandapani, Jawed Iqbal (2024). Characterization of microplastics in outdoor and indoor air in Ranchi, Jharkhand, India: First insights from the region. *Environmental Pollution*, Vol. 346, 123543
- Pullokaran, D., Bhardwaj, A., Haswani, D., Yadav, K., Raman, R.S., Shukla, D., Dhandapani, A., Iqbal, J., Naresh Kumar, R., Prasad, L., Venkatesh, P., Murthy, B.M.S., (2024) Spatio-Temporal Trends of the Relationships Between Surface PM2.5 and Its Chemical Constituents Across Three COALESCE Network Locations in India: A Mass Closure Investigation. *JGR Atmospheres*, Vol. 129, e2023JD039855
- Prasad, N., Mishra, A., Bhattacharya, T(2024). et al. Validation of AERMOD Prediction Accuracy for Particulate Matters (PM10, PM2.5) for a Large Coal Mine Complex: A Multisource Perspective. *Aerosol Sci Eng.*

- Abhishek Kumar, Tanushree Bhattacharya*, Wasim Akram Shaikh, Arpita Roy,(2024) Sustainable soil management under drought stress through biochar application: Immobilizing arsenic, ameliorating soil quality, and augmenting plant growth, Environmental Research, Volume 259, 119531, ISSN 0013-9351, . (IF: 8.3 | Q1)
- Kumari, M., Bhattacharya, T*(2024). Selection of tropical trees and shrubs for urban greening in coal mine complex: a case study of Singrauli, Madhya Pradesh. Environ Sci Pollut Res . (IF: 5.8 | Q1)
- Valorization of invasive plant and leaf litter wastes into biochar: Production, properties, and potential for arsenic removal, Groundwater for Sustainable Development, 101066, ISSN 2352-801X, (IF: 5.9 | Q1)
- Akash Mishra, Bindhu Lal (2024), "Fate of potentially toxic elements derived from coal mining in soil" Water Air Soil Pollution, 235-298, .April 2024
- Bhola, S., Chakraborty, S.(2024),Morphology and Polymeric Composition-Based Source Apportionment of Microplastics in Surface Water and Sediment of Drinking Water Supply Reservoirs in Ranchi, India. Environ. Process. 11, 32.
- Munshi, A.K., Patnaik, A.K., (2024) "Genetic Programming for Estimating Passenger Car Equivalent in Unsignalized Intersections", Bulletin of the Polish Academy of Sciences Technical Sciences, . (SCI Indexed)
- Munshi, A. K., Patnaik, A. K.(2024), Modelling roundabout entry capacity for mixed traffic flow using ANN: A case study in India Scientific Journal of Silesian University of Technology. Series Transport, 118, 11-22. ISSN: 0209-3324. (SCI Indexed)

- Bhuinyan, S.S., Sinha, A.K., and Bhagate, K. (2024) "A Case Study: Innovating Energy Dissipation in Ogee Spillways with Modified Ski Jump Designs", Educational Administration: Theory and Practice, Vol – 30, Issue – 5, in press, published by Auricle Global Society of Education and Research, Turkey (Scopus Indexed Journal)
- Kausher, R., Sinha A.K., and Singh, R. (2024) 'Delineation of Groundwater Potential Zones for Sustainable Development and Planning using AHP and GIS Techniques in the Coal Mining Province of Mahan River Catchment Area' Archives of Mining Sciences, Vol – 69, Issue – 1, 77-88, published by Polish Academy of Sciences (SCI Indexed Journal, Impact Factor 1.2)
- Kausher, R., Sinha A.K., and Singh, R. (2024) 'Hydrological Modeling and Watershed Simulations using the SWAT Model in the Coal Mining Province of the Mahan River Catchment, Central India' Environmental Earth Sciences, published by Springer-Verlag GmbH Germany (SCI Indexed Journal, Impact Factor 2.8)

>>> SPONSORED RESEARCH PROJECTS

- Performance Evaluation of the Roads Constructed using TerraZyme in the State of Jharkhand under PMGSY, NRIDA, Ministry of Rural Development, Government of India, Cost – Rs. 23.54 lakhs, PI – Prof. Bindhu Lal, Co-PIs – Prof. Anand Kr. Sinha and Dr. Mani Mohan
- Performance Evaluation of the Roads Constructed using Steel Slag in the State of Jharkhand under PMGSY, NRIDA, Ministry of Rural Development, Government of India, Cost – Rs. 23.54 lakhs, PI – Prof. Bindhu Lal, Co-PIs – Prof. Anand Kr. Sinha and Dr. Mani Mohan
- National Carbonaceous Aerosols Programme (NCAP): Working Group III – Emissions, sources apportionment and climate effects. Ministry of Environment Forest and Climate Change, Cost – Rs. 154.50 Lakhs, PI – Dr. R. Naresh Kumar, Co-PI – Dr. Jawed Iqbal.
- Metal-organic frameworks and sequential electrocoagulation for remediation of mining effluents. SERB, Cost – Rs. 25.01, PI – Dr. Sumit Mishra, Co-PI- Prof. Ashoke Sharon, Co-PI: Dr. R. Naresh Kumar
- Assessing the Abiotic and Biotic Factors in Pit Lakes for Sustainable Management of Water and Environment. Ministry of Coal, India, Cost – Rs. 208.58 Lakhs, PI – Dr. R. Naresh Kumar, Co-PI – Dr. Jawed Iqbal
- Prediction of Particulate Matter and Gaseous Pollutant Concentration Through ANN, PNN, And CART Models and Comparison with CALPUFF and AERMOD In Singrauli Coal Mines; Funding: Coal India Ltd.; Scheme: R & D; Sanctioned amount: Rs. 85.25 Lakhs (2021-2024)
- SERB-CRG sponsored project (Rs. 38.5 lakhs), (2022-2025) "Source Apportionment, Hydrodynamic Study and Environmental Fate Assessment of Micro-Plastics in Drinking Water Supplying Reservoirs of Ranchi, Jharkhand" to Dr. Sukalyan Chakraborty
- DST – FIST project (Rs. 92 lakhs), (2023 to 2028) "Strengthening Research in Monitoring and Remediation of Chemical Contaminants of Emerging Concern for clean and potable water".

CONSULTANCY PROJECTS ONGOING/COMPLETED

S. N o.	Title of Project	Funding Agency	Duration		Grant mobilized (Rs. lakhs)	Principal Investigator /Co-Investigator	Ongoing/ Completed*
			From	To			
1.	Scrutiny of DPRs	NRIDA, New Delhi	Ongoing	Ongoing	Rs. 1,43,912	Coordinator - Prof. Anand Kr. Sinha Members - Prof. Bindhu Lal and Dr. Mani Mohan	Ongoing
2.	Preliminary Report on the Environmental Vulnerability of Plastic Park in Deoghar on the basis of the Detailed Project Report (DPR) and Field Visit	JUIDCO, Ranchi	01/10/2023	31/12/2023		PI - R. Naresh Kumar, CO-PI - Dr. Jawed Iqbal, Co-PI - Dr. Sudeepan, J.	Completed
3	Traffic volume study of MDR of Jharkhand	BIOCRAT Environmental Services	20222023	ongoing	1 lakh	Dr. Ashish Kumar Patnaik (PI), Dr. Kirti Avishek (co-PI)	Ongoing

4	Time line motion study of Voting Process. 90K INR.	Funded by Election Commission of India. Govt. of Jharkhand. May 2024.	April 2024	May 2024	0.9L	Kirti Avishek (PI)	Compl eted
5	Study on carbon foot printing, carbon sink due to proposed opencast mining of Kotre Basantpur OCP.	KBP Mining PVt Ltd.	June 2023	May 2024	10.62 L	Indrajit Roy	Compl eted

Conferences/ Seminars/ Workshops/ Staff Development Programmes/FDP attended by Faculty Members

Sr. No.	Name of the Faculty	Title of the Conference/ Seminar /FDP	Funding Agency	Organizers	Venue	Date(dd.m.m.year)
1	Dr. Neeta Kumari	Online Weekly Lecture Series (Only on Saturday@3pm - every week) on Satellite Meteorology	Department of Remote Sensing, Birla Institute of Technology (BiT), Mesra and South Asian Meteorological Association (SAMA - https://southasianmet.org/).	2nd Sept 2023 to 20 Jan 2024		
2	Dr. Neeta Kumari	INCORPORATING UNIVERSAL HUMAN VALUES IN EDUCATION (An AICTE initiative) 6 day UHV II FDP	AICTE	3rd to 8th June 2024		
3	Dr. Neeta Kumari	Sustainable practices in civil engineering	ISTE self sponsored Online FDP programme organised by dept. of civil engineering, tulsi ramji Gaikwad - Patil college of engineering and technology, Nagpur	24th June to 28th June 2024		
4	Dr. Sukalyan Chakraborty	International Conference on Pollution Control for Clean Environment-2023 (ICPCCE-2023),	IIT, Bhubaneswar	IIT Bhubaneswar	IIT Bhubaneswar	15-16th December 2023.
5	Dr. Sukalyan Chakraborty	Two-Days National Seminar on "Microplastics: Current Scenario, Challenges, & Future Perspectives"	Division of Environmental Monitoring and Exposure Assessment (Water & Soil), ICMR – NIREH Bhopal	Online	Online	August 22 – 23, 2023
6	Dr. Sukalyan Chakraborty	International conference on Sustainable and Innovative Mining Practices - 2023	organised by National Institute of Technology, Rourkela	NIT Rourkela	NIT Rourkela	November 16, to 18, 2023
7	Dr. Sukalyan Chakraborty	National Workshop on Microplastic Research	IIT Madras	Frontier Lab	IIT Madras	March 1-2 2024

>>> BOOK CHAPTERS

- Kumari, N., Pandey, S., Kumar, G. (2024). Sand Mining: A Silent Threat to the River Ecosystem. In: Kanhaiya, S., Singh, S., Dixit, A., Singh, A.K. (eds) Rivers of India. Springer, Cham.
- Aditya Kumar Jha and Sukalyan Chakraborty. Biosynthesis of Nanozerovalent Iron (nZVI) Using Shorea robusta Leaf Extract and Its Application in UV-Assisted Photocatalytic Degradation of Methyl Orange. Sustainable Advanced Technologies for Industrial Pollution Control. Pg. 39 – 46. DOI : 10.1007/978-3-031-37596-5

>>> ACHIEVEMENTS

1. AWARD / RECOGNITION BESTOWED ON FACULTIES

S.N O.	Name of the Faculty Member	Title of the Award / Honour	Organisation	State / National / International Level	Year / Duration
1	Kirti Avishek	Member-State Environmental Impact assessment authority, MoEFCC, GOI.	MoEFCC, GOI	State	3 years (2024-2027)
2	Tanushree Bhattachary a	Indian National Science Academy Associate Fellow, 2024	Indian National Science Academy	National	
3	Sukalyan Chakraborty	Outstanding Researcher in the field of Earth Sciences in India	Career 360	National	2023

2. GATE RANKERS :



Aman Ujjawal(2016-2020)
AIR 99 in GATE 2021
AIR 244 in GATE 2022



Ankur Mishra(2018-2022)
AIR 432 in GATE 2022



Ashish Nand(2019-2023)
AIR 628 in GATE 2022



Navneet Kumar(2019-2023)
AIR 517 in GATE 2022

3. FIVE STUDENTS HAVE QUALIFIED GATE 2024 FROM 2021 BATCH.

4. PLACED IN BAIN CAPABILITY NETWORK :



AVINASH PANDEY
2K21 BATCH

5. HPCL ALL INDIA RANK 1 :



MD ADIL MAAZ
2K19 BATCH

6. 13 STUDENTS FROM 2K20 GOT PLACED IN L&T.

7. VARIOUS OTHER PLACEMENTS OF 2K20 STUDENTS :



ASHAR SHAKIL

Axis Bank



DHRUV CHOWDHARY

SLNKO Energy



AYUSH RAJ

Maruti Suzuki



SIDDHANT SRIVASTAVA

Bain Capability Network



VINIT VERMA

PwC India



HARSH KHOKAR

ZS Associates India



AYUSH PRASHANT

Future First



AAKASH KUMAR

Maruti Suzuki

STUDENT ACTIVITIES

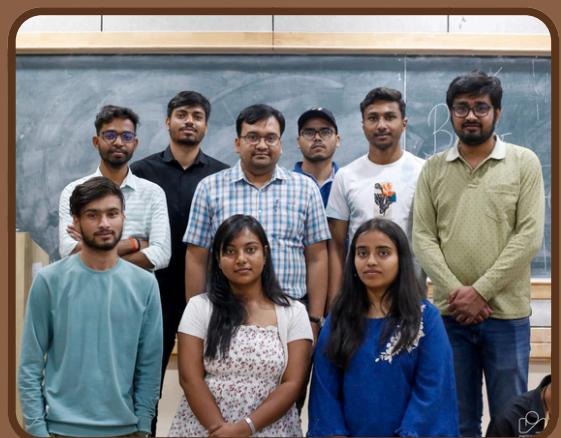
>>> BRIDGE THE GAP

The Civil Engineering Society successfully conducted the event "Bridge the Gap" on 15th March. The event drew a large number of participants, showcasing their engineering skills through creative and structurally sound bridge designs. Teams were provided with papers, sticks and adhesive/tying materials and tasked to construct bridges that were judged based on their ability to bear weight, challenging the teams to apply their knowledge of load distribution, materials, and design principles.

The event consisted of two rounds:-

- 1.General Aptitude round
- 2.Structural Accuracy

The competition witnessed intense enthusiasm as participants demonstrated innovation in their designs, reflecting the practical application of civil engineering concepts. Bridges were put to the test, with judges evaluating their structural integrity and overall performance under increasing loads. The success of "Bridge the Gap" was marked by both the high turnout and the impressive engineering solutions presented. It provided an excellent platform for aspiring civil engineers to gain practical insights and showcase their talents in a challenging yet rewarding environment.



RETROUVAILLE 24

The Civil Engineering Society of BIT Mesra Organized "ALUMNI MEET 2024"- a programme to facilitate, consolidate and coordinate alumni activities at Seminar Hall-I in R&D Building on 7th March. The primary objective of organising alumni meet is to reconnect with the alumni and celebrate their success and various achievements.



The alumni started arriving at college by 3:00 p.m. and they were received by the volunteering team. The alumni meet started with a welcome address by the Head of the Department of Civil and Environmental Engineering, Dr Bindhu Lal. The meeting was graced by the dignitaries of the department.

Tanay Tuhin and Kumari Richa, the hosts of the event, presented a formal welcome to the guests, dignitaries and audience. The hosts then invited Dr. Bindhu Lal, Head of the department and our esteemed guests, for the lighting of lamp ceremony. Following this our esteemed alumni were felicitated by our dignitaries. Dr. Bindhu Lal then addressed the audience with her warm and enlightening words.





Following this, the alumni also interacted with the students and gave career guidance regarding preparations for internship and placements and how they should face HR interviews.

During the interaction session they

- Shared the work experience
- Discussed about how to start start-ups.
- Shared about the various job opportunities .
- Shared about the recent projects of their experiences.
- Discussed about the current trends of placements.
- Shared about giving expertise and career guidance to the students.

They also answered the questions of the audience.

Vote of thanks is being given by Mr. Kunal Kumar, the general secretary of Civil Engineering Society, BIT Mesra.

KEY MOMENTS

">>>> OUTGOING CIVIL STUDENT DURING CONVOCATION' 23



">>>> CIVIL ENGINEERING GRADUATES WITH SHRI C K BIRLA JI



RECENT GRADUATES



BIRLA INSTITUTE OF TECHNOLOGY
MESRA, RANCHI



BACHELOR OF TECHNOLOGY (2019-2023)
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING



MASTER OF TECHNOLOGY (2021-2023)
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING