

RELATIONS

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An Annual Newsletter 2025 for Friends of CE Dept. NIT Agartala



CIVIL ENGINEERING DEPARTMENT



Vision, Mission of CE Department

THE DEPARTMENT OF CIVIL ENGINEERING IS ONE OF THE OLDEST AND LARGEST DEPARTMENTS OF NIT AGARTALA, HAVING BEEN ESTABLISHED IN 1965 WITH THE INCEPTION OF TRIPURA ENGINEERING COLLEGE. THE DEPARTMENT IS COMMITTED TO CONTRIBUTING TO THE NATION THROUGH EXCELLENCE IN RESEARCH, SCIENTIFIC INQUIRY, AND TECHNICAL EDUCATION. ITS MISSION IS TO IMPART QUALITY EDUCATION THAT BUILDS STRONG FUNDAMENTALS IN ENGINEERING, SCIENCE AND TECHNOLOGY WHILE FOSTERING A SENSE OF SOCIAL RESPONSIBILITY. THE DEPARTMENT ALSO FOCUSES ON ENHANCING STUDENTS' ENGINEERING COMPETENCIES FOR EMPLOYABILITY, ENTREPRENEURSHIP, AND HIGHER STUDIES, AND ACTIVELY UNDERTAKES COLLABORATIVE PROJECTS TO PROMOTE SUSTAINED INDUSTRY-ACADEMIA INTERACTION.

DIRECTOR'S MESSAGE



PROF. S. K. PATRA

It gives me immense pleasure to note the publication of Relations 2025, the annual newsletter of the Department of Civil Engineering, NIT Agartala. The newsletter reflects the department's consistent progress in academics, research, innovation, and outreach. The achievements of faculty members, students, and researchers, along with national and international collaborations, sponsored projects, and industry engagement, are truly commendable. I appreciate the department's efforts in nurturing technical excellence, social responsibility, and innovation through initiatives such as the Civil Innovation and Technology Cell. I congratulate the editorial team and wish the department continued success in the years ahead.

HOD'S MESSAGE



Prof. Deb Dulal Tripura

I am delighted to present Relations 2025, showcasing the vibrant academic and research ecosystem of the Department of Civil Engineering, NIT Agartala. The newsletter highlights our collective efforts in teaching, research, consultancy, innovation, and student development during the year. From quality publications and sponsored research to student achievements, placements, and activities of the Civil Innovation and Technology Cell, this issue reflects our commitment to excellence and continuous growth. I sincerely thank our faculty members, students, staff, alumni, and collaborators for their valuable contributions. I also appreciate the editorial team for compiling this informative and inspiring publication.

MAJOR ACHIEVEMENTS

SPONSORED RESEARCH PROJECTS

The research projects in Civil Engineering department at NIT Agartala, funded by various Indian government agencies, span a range of critical topics. The **Inclusive Technology Business Incubator (i-TBI) (DST)** supports innovation in technology from 2022-2026 with a funding of ₹419.9 Lakhs. The **FIST Project (DST)** focuses on disaster mitigation and sustainable materials (₹88 Lakhs). The **Seismic Performance of Earthquake-Resistant Blocks (SERB)** addresses affordable housing solutions (₹40 Lakhs). The **Biogas Purification via Bio-methanation project (CSIR)** aims to convert CO₂ to CH₄ for biogas purification (₹23.93 Lakhs). Several projects explore environmental and regional issues, such as **Arsenic Contamination in Groundwater (STIC-ISRO, ₹21 Lakhs)**, **Weather Impact on Tea Cultivation (STIC-ISRO, ₹19.8 Lakhs)**, and **Seismic Vulnerability of RC Buildings (CSIR, ₹20.21 Lakhs)**. Other projects, including **Low-Cost Seismic Vibration Control (SERB, ₹25.58 Lakhs)** and **Self-Centering Concrete Structures (Virginia Tech, ₹13 Lakhs)**, focus on advanced engineering solutions. A **Fluoroquinolone Antibiotics study (DST, ₹100 Lakhs)** targets antimicrobial resistance.

ARJUNA 1.0

ARJUNA 1.0 - North East Tech Summit 2024, held at NIT Agartala CE department on 22-23rd October 2024, showcased student innovations on mental health, landslide detection, and groundwater recharge. **NIT Agartala's MindTraQ, UEM Kolkata, and Dronacharya Group of Institutions** won in respective case studies. The summit celebrated creativity, problem-solving, and youth innovation nationwide.



SMART INDIA HACKATHON

Team PathoGems from NIT Agartala won the **Smart India Hackathon (SIH) 2024, Hardware Edition**, held from 11th to 15th December 2024, for their innovative solution on personalized testing kits for Residual Chlorine levels. Competing among 101 teams nationwide, they were mentored by **Dr. Pankaj Kr Das** and **Mr. Subhajit Deb**.



INVITED LECTURES

- **Dr. Animesh Debnath** delivered a lecture as special speaker in the program organized by **The Institute of Engineers (India), Tripura State Centre** on "**Water Resource Management and Envisaging Environment**" in connection with the Observance of Regional Language Promotional Day - 2024 on 23rd February 2024.
- **Dr. Mrinmoy Majumder** delivered a lecture as special speaker in the program organized by The Institute of Engineers (India), Tripura State Centre on "**Water for Peace**" in connection with the Observance of **World Water Day - 2024** on 22nd Mar 2024.
- **Dr. Mrinmoy Majumder** delivered lecture as an expert speaker in the program 5-days online Faculty Development Program (FDP) on Modelling and Application of AI/ML in Engineering on 15th Nov 2024.
- **Dr. Dipankar Sarkar** delivered lecture as an expert speaker in the Seminar on "**Construction of Water-Resistant Roads in Tripura Challenges, Opportunities & Innovations**" in connection with the Observance of "Transport Day" was held on 10th November, 2024 (Sunday). in the Seminar Hall of the Institution of Engineers (India), Tripura State Centre, Pandit Nehru Complex, Agartala.
- **Dr. Sagarika Panigrahi** delivered a lecture as special speaker in the program organized by The Institute of Engineers (India), Tripura State Centre on "**Sustainable waste to energy technologies**" in connection with the Observance of 105th foundation day of IEI on 13 September 2024.



LIST OF Ph.D AWARDEE IN THE YEAR 2024 FROM CE DEPT.

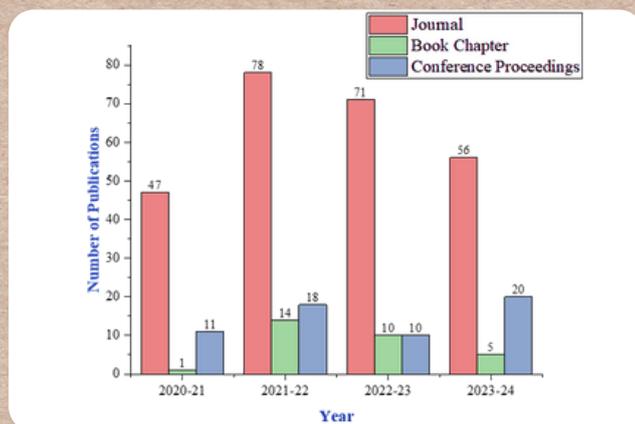
Photo	Name	Enrollment No.	Supervisor Name	Thesis Title	Date of Defence Viva Voce
	SHASHWATI SOUMYA PRADHAN	18EDCER001	Dr. Umesh Mishra and Dr. Sushant Kumar Biswal	Experimental study on strength and Durability properties of cementless alkali Activated concrete incorporating Agricultural and industrial wastes	23rd Dec 2024
	ARUN KUMAR SHUKLA	16EDCEA003	Dr. Umesh Mishra	Investigation of Novel Nanomaterials for Enhanced Performance of Polyphenylsulfone Membranes in Pollutant Removal from Wastewater	11th November 2024
	ABHIJIT DEBNATH	19ODCER002	Dr. Sujit Kumar Pal	Behaviour of sheet pile wall under the action of square, circular and strip footing: Numerical and experimental approaches	29 November 2024
	MITHUN GHOSH	16EDCER006	Dr. Ratul Das	Hydrodynamics of permeable gravel-bed stream	11th June 2024
	BIPUL SEN	14EDCEA001	Dr. Rajib Saha	An experimental and numerical study on seismic strength improvement in rammed earth houses	27th June 2024
	AMITABHA ACHARJEE	15EDCER001	Dr. Partha Pratim Sarker	Effect of built-environment, accessibility, attitude, and perception on travel behavior: a study for a small-sized Indian city	20th May 2024
	SONU KUMAR GUPTA	17EDCER011	Dr. Surajit Das	Damage detection in structures with the application of artificial neural network-based modified mode shape curvature	20th May 2024

NATIONAL AND INTERNATIONAL COLLABORATION

- Dr. Mrinmoy Majumder has international research collaborations with Prof. Shao-hua (Marko) Hsu, Professor of Water Resources Engineering and Conservation at Feng Chia University, Taichung City, Taiwan; Dr. Babak Vaheddoost, Associate Professor (Civil Engineering – Hydraulics and Water Resources) at Bursa Teknik Üniversitesi, Turkey; and Dr. Abdul Mohsen Alamry, Associate Professor of Hydrogeology at Aeden University, Saudi Arabia. Dr. Mrinmoy Majumder also has national research collaborations with Dr. Ganesh D. Kale, Associate Professor, Department of Civil Engineering, NIT Agartala, India, and Dr. Suryanarayana M. V. Tallavajhala, Director, Water Resources Engineering & Management Institute, MSU Baroda, India.
- Dr. Animesh Debnath is having International collaboration with Dr. Murat YILMAZ, Assistant Professor, Department of Chemistry and Chemical Processing Technologies, Osmaniye Korkut Ata University, Turkey. Dr. Animesh Debnath is also having collaboration with Dr. Dipaloy Datta, Associate Professor, ChE Department, MANIT Jaipur, India

PUBLICATION DETAILS

SUMMARY	JOURNAL	BOOK CHAPTER	CONFERENCE PROCEEDINGS
2020-21	47	01	11
2021-22	78	14	18
2022-23	71	10	10
2023-24	56	05	20



STUDENT ACHIEVEMENTS

SMART INDIA HACKATHON

Team PathoGems from NIT Agartala secured the prestigious title of joint winners in the **Smart India Hackathon (SIH) 2024, Hardware Edition**, held on 11th -15th December 2024, organized by the Ministry of Education, MoE's Innovation Cell, and AICTE. The team outshone 101 submissions from across India with their innovative solution to the problem statement **SIH-1569: "Personalized testing kits for testing Residual Chlorine levels at delivery points."** This national-level hackathon witnessed participation from over 2,99,352 students. Team members **Atabi Debnath (Team Lead), Divyam Raj Singh, Varun Srivastava, Sumit Soni, Amitabh Anand, and Sreejit Das**, all from NIT Agartala, presented their groundbreaking solution. The team was mentored by **Dr. Pankaj Kr Das and Mr. Subhajit Deb**. Congratulations to the team for their dedication, creativity, and success on a national platform!



ARJUNA 1.0

Arjuna 1.0 – North East Tech Summit 2024, organized by the **Civil Innovation and Technology Cell** of NIT Agartala, took place on 23rd October 2024. It aimed to foster innovation, creativity, and technical excellence among students from technical institutions across India. The summit was a groundbreaking event, being the first-ever national-level hackathon hosted by NIT Agartala. With enthusiastic participation, **600+ registrations, 100+ PPT submissions** from innovators across the country, the summit featured tech talks, panel discussions, and project showcases on real-world challenges. Participants presented solutions in areas such as mental health, landslide detection, and groundwater recharge. The summit brought together brilliant minds, offering a platform to showcase groundbreaking solutions, and highlighted the immense potential of young innovators across India.



FOOTBALL CHAMPIONS

The **Civil Engineering (CE) Department** students of NIT Agartala won the **Interdepartmental Football Tournament** in September 2024. On 23rd September 2024, the HOD of CE, Prof. Deb Dulal Tripura felicitated the victorious team members, recognizing their exceptional performance, teamwork, and contribution to the department's success in the competition.



AV TURBOTIDE SHOWCASE

The "**Av-Turbotide**" project, was showcased at the **34th Tripura Industries and Commerce Fair** (25th January - 11th February) by the team members: **Udayan Banik, Atabi Debnath, Tushar Barman, Mounadip Malakar, Ankita Debnath, Srima Chakraborty, Ishita Datta, and Udayan Das**, focuses on a water pollution monitoring RC boat equipped with sensors to assess water quality in rivers, lakes, and ponds. The boat measures key parameters like pH, dissolved oxygen, turbidity, temperature, and pollutant concentrations, enabling real-time data collection. This initiative aids in early detection of pollution, quick responses, and mapping pollution sources, which is crucial for addressing water pollution challenges, particularly in India. The project combines technology, environmental awareness, and education for better water management.



CIVIL INNOVATION AND TECHNOLOGY CELL

- **Neerjala Kumari Choudhary** from the Civil Innovation and Technology Cell has emerged as the winner of the **Circular Economy Hackathon** organized by the **Tripura State Pollution Control Board** under the sub-theme **Construction and Demolition (C&D) Waste**.
- **Atabi Debnath & Binita Bhowmik** from NIT Agartala, representing the Civil Innovation and Technology Cell, has reached the finals of the **Ideation Hackathon** with their project, "**Smart Monitoring & Protection System for Catchment Area Treatment.**" Funded by the Ministry of Development of North Eastern Region (MDoNER) under the PM-DevINE initiative, the project aims to address the challenge of monitoring Catchment Area Treatment (CAT) areas. By using advanced technologies such as drones, satellite imagery, and AI, the system tracks vegetation growth, detects illegal activities like deforestation, and provides real-time data to empower stakeholders with insights for informed decision-making and sustainable management.
- **Shivam Kumar, Karthik Dakoji, and Shubham Kumar**, students from NIT Agartala's Civil Engineering department, have advanced to the finals of the **SSN - ICE Student Innovation Challenge 2024**, hosted by the Institution of Civil Engineers (ICE - UK). Their project, "**Elevated Pedestrian Walkways and Bicycle Highways: Enhancing Sustainable and Decentralized Urbanization,**" focuses on promoting sustainable and decentralized urban infrastructure. Their innovative ideas aim to revolutionize urban living by enhancing eco-friendly transportation and reshaping city planning for the future.



DISTINGUISHED ACADEMICIANS VISITED CIVIL ENGINEERING DEPARTMENT OF NIT AGARTALA IN 2024



Dr. Sarat Kumar Das
Professor Dean FW & Former HOD,
CE, IIT ISM Dhanbad



Dr. Chaitali Ray
Professor, Civil Engineering,
IEST Shibpur



Dr. Mahabir Panda
Professor, Civil Engineering,
National Institute of Technology Rourkela



Dr. Neelima Satyam
Professor, Civil Engineering,
Indian Institute of Technology Indore



Dr. Pranab Kumar Mohapatra
Professor, Civil Engineering,
Indian Institute of Technology Gandhinagar



Dr. Bimlesh Kumar
Professor, Civil Engineering,
Indian Institute of Technology Guwahati

SPONSORED RESEARCH PROJECTS

TITLE OF THE PROJECT	PERIOD	FUNDING AGENCY	AMOUNT (IN LAKHS)	CO-ORDINATORS
Inclusive Technology Business Incubator (i-TBI) at National Institute of Technology Agartala,	2022-2026	Department Of Science & Technology(DST), Govt. of India	419.9	Prof. U. Mishra & Prof. P P Sarkar
"FIST- PROJECT (Level-B)" Setting up Advance Testing and Research Facilities for the Centre of Disaster Mitigation Using Sustainable Materials	5 years (Letter of Award: 31 st October 2023)	Department Of Science & Technology(DST), Govt. of India	88.00	HOD (CE)
Development and assessment of seismic performance of affordable earthquake resistant interlocking block for earthen masonry houses	3 Years (24May, 2024)	Science and Engineering Research Board (SERB), Department Of Science & Technology(DST), Govt. of India	40.00	Prof. Rajib Saha & Dr. Manu S Nadesan
Converting CO ₂ present in biogas to CH ₄ by biomethanation technique: A low cost approach to purify biogas	3 Years	Council of Scientific & Industrial Research (CSIR), Govt. of India	23.93	Dr. Sagarika Panigrahi
Knowledge Guided GIS based Hydrogeochemical modelling to understand the sources & control of Arsenic (As) in contamination in Groundwater of Tripura.	2019-24	STIC- ISRO, GOI	21.0	Dr. U. Mishra Dr. S. Biswal & Dr. P. Choudhury
Long term trend in weather parameters and atmospheric chemistry and its effect on tea cultivation over north-east India	2019-24	STIC- ISRO, GOI	19.8	Dr. P. Bhattacharjee Dr. U. Mishra
Seismic Vulnerability Assessment of RC Buildings Constructed on the Hill Slope of Northeastern Region of India,	2024-2027	CSIR India	20.21	Dr. Lipika Halder, Dr. Dharendra Kumar Pandey
A Low-Cost Seismic Vibration Control Mechanism for RC Buildings using Compliant Tuned Liquid Dampers, Funding agency- Cost (Rs)- Duration - 3 Years (2022-2025), Role- Co-PI	2022-2025	Science and Engineering Research Board (SERB), Govt. of India	25.58	Dr. Dharendra Kumar Pandey
Investigation on the Self-centering and Energy Dissipation Capacity of SMA Fiber-Based Concrete Structures.	2022-2025	Virginia Tech Institute of Critical Technology and Applied Science,	13	Dr. Dharendra Kumar Pandey
Monitoring and Understanding the Distribution Behaviour of fluoroquinolone antibiotics and its resistant entities in surface water An Integrated treatment approach towards antimicrobial resistance	2025-2028	Department Of Science & Technology(DST), Govt. of India	100	Dr. V.C Padmanabhan & Dr. Animesh Debnath

PLACEMENT HIGHLIGHTS

The college placement season saw notable participation from prominent companies including PhonePe, PIE Infocomm, Futures First, Teachnook, Trident, ABB, L&T Ltd., RIL, Autodesk, Tata Power, and many others. The highest package offered was 20 LPA, with the average package standing at 8.23 LPA. Among the top performers, Prateek Prakash Pathak (20UCE089), Pragati Kumari (20UCE128), and Pranjal Khandelwal (20UCE026) received the top three packages. These achievements highlight the strong placement drive and the success of students securing excellent offers from leading organizations across various industries.



Name : Pragati Kumari
Placement: Autodesk
Package offered: 7.0 LPA



Name : Divya Prakash
Placement: Powergrid corporation of India limited.
Package offered: 18.0 LPA

EVENT ORGANIZED BY CIVIL ENGINEERING CLUB

FRIDAY TALKS

The Friday Talks, launched on January 5, 2024, is a dynamic platform aimed at inspiring and motivating young minds. Covering diverse topics such as Engineering Skills, Spirituality, International Collaboration, and Socio-Political issues, it offers valuable insights and fosters discussions to ignite creativity and drive in various fields.

The several Friday Talks featured expert sessions are:

1. **Mr. KV Sivannarayana (Associate Chief Consultant, L&T Infra Engineering)** discussed "Good Practices in Geotechnical Investigation, Field Testing for Viaduct Structures, and Foundation Recommendations."
2. **Dr. Amardeep Singh (Associate Professor, Changzhou Institute of Technology, China)** presented on "Concrete 3D Printing: An Overview."
3. **Prof. Dr. U. Johnson Alengaram (Director, Centre for Innovative Construction Technology, University of Malaya, Malaysia)** spoke on "Current Trends in Sustainable Building Materials and the Construction of the First Cement-Free House for Bus Drivers at University Malaya."



PLANTATION 2024

The Civil Engineering Department organized a plantation drive on 10th September 2024 to support the cause "Ek Ped Maa Ke Naam," launched by our Honourable Prime Minister to support the World Environment Day Celebration: An invitation to plant a tree on the Coming days as a tribute to our mother. Prof. (Dr.) Debasis Neogi, the Honourable Director (In-Charge), NIT Agartala, and Col. (Dr.) Ashish Badola, Registrar of NIT Agartala, graced the occasion. All the students, Faculty members, and staff joined hands to celebrate the cause and made it a success.

GREEN INITIATIVE!



TEACHER'S DAY 2024



INDUSTRIAL VISIT

- The Civil Engineering Club at NITA had an enriching industrial visit to the **Panchamukh Water Treatment Plant on March 23, 2024**. The trip offered a deep dive into water treatment technology, showcasing processes ensuring safe water for communities. Participants engaged with industry experts, networked with peers, and gained valuable insights into sustainable engineering practices. From environmental sustainability to infrastructure development, the visit explored key aspects of civil engineering.
- The Civil Engineering Club at NIT Agartala had an enriching visit to the **Lecture Hall Complex construction site**. Guided by professors and site engineers, students explored construction planning, deciphered blueprints, and learned about elevations, cost estimation, and structural principles. The hands-on experience deepened our theoretical knowledge and reinforced the importance of practical learning and collaboration in civil engineering.



RESEARCH SCHOLARS' FEST

Research scholar's fest was organized by CE Deptt NIT Agartala on 24th October 2024 wherein all the PhD scholars presented their research work through poster presentations. M Tech 2nd years students also participated in this program with poster presentations. The program was coordinated by **Dr. Manu S Nadesan and Dr. Debashish Karmakar, Assistant Professor CE Deptt NIT Agartala**. The program was guided by **Prof. Deb Dulal Tripura, HOD, CE Deptt NIT Agartala**. All the faculty members, staffs, UG, PG students and PhD scholars of CE Deptt have attended the program with full enthusiasm.



INDEPENDENCE DAY 2024



Published by the Newsletter Committee of CE Dept., NITA



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Associate Prof, CE Dept.



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Know more about CE Department

