



Indian Institute Of
Technology, Guwahati

Centre For Career Development

Department of
Civil Engineering

Department Brochure



About the Institute

Established in 1994, Indian Institute of Technology Guwahati is the sixth member of the IIT fraternity and one of India's premier institutions for higher education, research, and innovation. Within a short span, the Institute has emerged as a global centre of excellence in science, technology, management, and design.

The picturesque campus spans 285 hectares on the northern bank of the Brahmaputra River, approximately 20 km from the heart of Guwahati city. Surrounded by scenic hills and open spaces, it offers a perfect environment for learning, research, and holistic development.

IIT Guwahati offers a wide array of academic programmes including B.Tech., B.Des., BSc (Hons), M.Tech., M.Des., M.Sc., MBA, M.A., MS(R) and Ph.D. across 11 departments, 9 interdisciplinary centres, and 5 schools, covering major disciplines in engineering, science, humanities, healthcare, and management.

The Institute has built world-class infrastructure and houses state-of-the-art laboratories and National Centres of Research that support cutting-edge research. Students are encouraged to take up interdisciplinary coursework, pursue minor degrees, and choose from a rich variety of open and interdepartmental electives.

IIT Guwahati has signed MoUs with top international universities, facilitating semester exchanges and summer internships, thereby broadening students' global exposure. Our students regularly intern at leading global firms and research institutions, gaining invaluable real-world experience.

Ranked among the top 100 world universities under 50 years by Times Higher Education (THE), IIT Guwahati continues to excel globally. The Institute was ranked 42nd globally in 'Research Citations per Faculty' and 334th overall in QS World University Rankings.

About the Department

Vision

To embark on a knowledge endeavor through innovation in civil engineering education and research for sustainable development of the nation with special emphasis on the Northeastern region.

Mission

- To create collegial, collaborative and stimulating environment for achieving academic excellence.
- To undertake inter-disciplinary research for sustainable development of the nation.
- To integrate research, innovation and technology in the learning domains of undergraduate and postgraduate education.
- To serve as a knowledge hub for the society by fostering continuing education, professional events and innovative consultation

The Department of Civil Engineering at IIT Guwahati was established in 1997 and has continually upgraded itself in terms of academic programs and research infrastructure, including state-of-the-art laboratories. The department attracts the finest young and dynamic faculty members and the best of the students for its Bachelors, Masters, and Doctoral programs. Presently, the department has 50 top quality faculty members. The Department is committed to providing excellent in-classroom infrastructure, enrichment of the academic and professional experience of students, outreach to the engineering community and society, and advancement in Civil Engineering.





HEAD OF DEPARTMENT
**Professor
Rajib Kumar
Bhattacharjya**

Message from Head of the Department

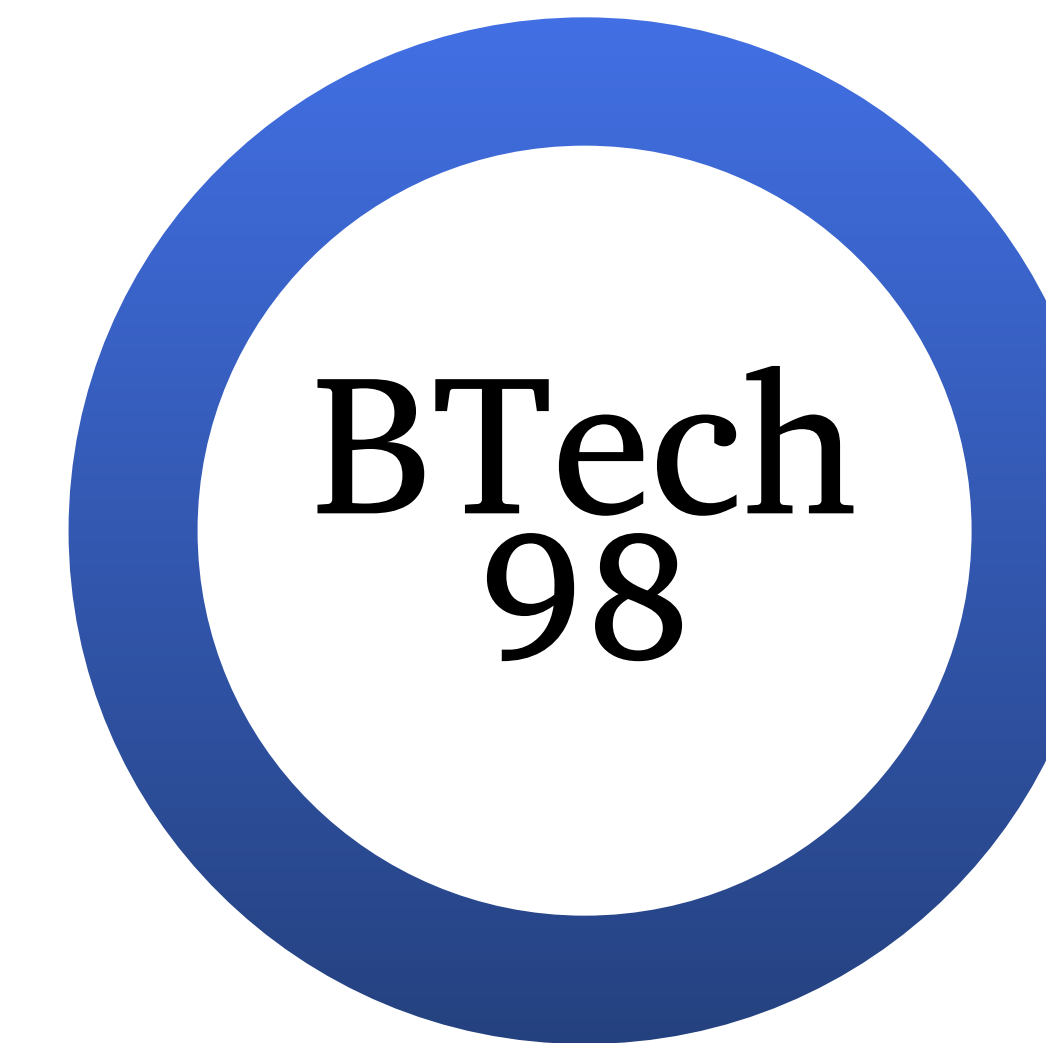
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The presence of state-of-the-art experimental and computational facilities, active institute-industry interaction, national and international exchange programs and industrial/research training opportunities help the students in the department to excel in the competitive professional life. Our graduates and postgraduates have been selected by leading national and multinational firms and research/academic institutes.

The achievement of our students have really have made us proud! The department is committed to providing excellent in classroom infrastructure, enrichment of the academic and professional experience of students, outreach to the engineering community and society, and advancements in Civil Engineering. We would be happy to receive any valuable suggestions from your side. Feel free to contact us if you have any such questions or comments

BACHELORS OF TECHNOLOGY IN CIVIL ENGINEERING

Our B.Tech program in Civil Engineering offers a meticulously crafted curriculum that covers all major disciplines of civil engineering, including structural engineering, geotechnical engineering, transportation engineering, environmental engineering, water resource engineering and management, Infrastructure engineering and management and Earth system science and engineering. We provide our students with a well-rounded education that prepares them for diverse career paths within the field. The B.Tech curriculum involves an eight-semester program with the objective of providing a platform for the students to develop skills and knowledge in the field of Civil Engineering. Apart from that, the program also includes courses on humanities and social sciences and many electives. Our students gain hands-on experience and valuable skills by collaborating with industry leaders in the civil engineering sectors.



TOTAL
NUMBER OF
GRADUATING
STUDENTS

SOFTWARE



KEY COURSES

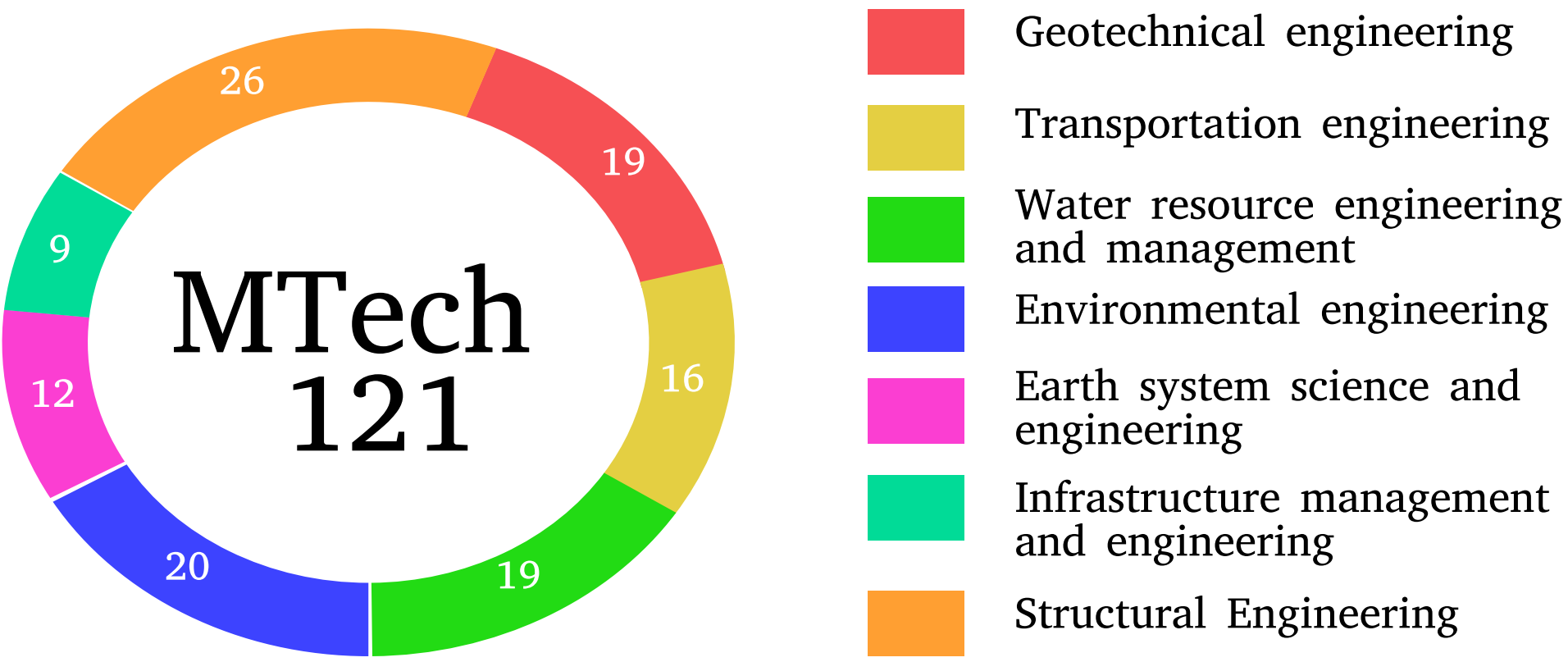
- Solid Mechanic
- Engineering Drawing
- Civil Engineering Material
- Fluid Mechanic
- Structural Analysis
- Surveying
- Geotechnical Engineering
- Environmental Engineering
- Hydraulics and Hydraulic Structures

- Reinforced Concrete Design
- Transportation Engineering
- Construction Technology and Management
- Engineering Geology
- Design of Steel Structure
- Engineering Hydrology
- Mathematical Concepts and Application in Civil Engineering

- Civil Engineering Materials Laboratory
- Fluid Mechanics Laboratory
- Engineering Geology Laboratory
- Surveying Laboratory
- Geotechnical Engineering Laboratory
- Environmental Engineering Laboratory
- Transportation Engineering Laboratory
- Traffic Engineering Laboratory
- Hydraulics and Hydraulic Structure Laboratory

MASTERS OF TECHNOLOGY IN CIVIL ENGINEERING

The M.Tech curriculum involves a rigorous four-semester program tailor-made to the area of specialization. The program follows a balanced approach of training in both qualitative/experimental and quantitative aspects of the respective field of specialization. The students are also required to undertake teaching assistantships, thus grooming them into well-rounded individuals capable of completing challenging assignments. The Department offers degrees in seven different specializations: Earth System Science and Engineering, Environmental Engineering, Geotechnical Engineering, Infrastructure Engineering and Management, Structural Engineering, Transportation Systems Engineering, Water Resources Engineering and Management.



PhD PROGRAMME

Our Ph.D. program, currently enrolling 257 students, is designed to facilitate comprehensive proficiency in the chosen field. This is accomplished through a structured curriculum comprising coursework and culminating in intensive doctoral research. Our students actively engage in both experimental and theoretical research across seven specialized areas within Civil Engineering.



EARTH SYSTEM SCIENCE AND ENGINEERING

Key Research Areas

- Remote Sensing and Advanced Image processing
- Applications of Geographic Information System(GIS) and Scientific computing for geospatial Analysis
- Photogrammetry, LIDAR and UAV Applications
- Petrophysical modeling for petroleum exploration
- Hydrocarbon exploration
- Rock Mechanic Geophysical Survey and Exploration
- Geodynamics and Natural Resources Management
- Sensor Calibration and Synthetic Simulation
- Isotope Hydrology

Software Application



ENVI



MATLAB®



ArcGIS

Key Courses / Electives

- | | | |
|--|---|---|
| <ul style="list-style-type: none">• Earth System Dynamics• Exploration Geoscience• Advanced Remote Sensing• Geohazard Science and Engineering• Advanced Techniques in Geoscience• Numerical Methods• Optimization Methods• Statistical Methods in Civil Engineering• Geodesy and Mapping• Geostatistics• Structural Dynamics | <ul style="list-style-type: none">• Advanced Fluid Mechanics• Flow and Transport Processes in Fractured Media• Petroleum Geology• Structural Geology• Geochemistry• Advanced Image and Spectral Analysis• Precision Remote Sensing• Advanced Hydrogeology• Rock Mechanics• Petrophysics• Subsurface Investigation and Instrumentation• Underground Exploration• Environmental Hydrology | <ul style="list-style-type: none">• Stochastic Hydrology• Continuum Mechanics• Introduction to Multiphase Flow• Environmental Management of Water Resources• Pollution and Contaminant Flux in Water Environment• Water Resources Systems Analysis, Planning & Management• Sediment Dynamics in Fluvial Systems• Engineering Seismology• Earth System Engineering• Earthquake Engineering• Climate Change: Causes, Effects and Mitigation• Landslide Engineering• Advanced Geological Engineering |
|--|---|---|

ENVIRONMENTAL ENGINEERING

Key Research Areas

- Wastewater treatment
- Solid waste management
- Biogas
- Pollution modeling
- Air quality modeling
- Sludge treatment
- Heavy metal removal and recovery
- Environmental impact, risk assessment & management

Software Application



Key Courses / Electives

- Process Chemistry for Water and Wastewater Treatment
- Physico-chemical Processes in Environmental Engineering
- Air and Noise Pollution
- Biological Processes in Environmental Engineering
- Solid and Hazardous Waste Management
- Design of Environmental Engineering Systems
- Numerical Methods
- Optimization Methods

- Computational Methods in Hydraulics and Environmental Engineering Applications
- Air Quality Modeling
- Environmental Systems Engineering Laboratory
- Environmental Management
- Principles of Water Quality and Legislations
- Industrial Wastewater Pollution Control
- Water Distribution and Wastewater Collection System Design

GEOTECHNICAL ENGINEERING

Key Research Areas

- Shallow and deep Foundation
- Stability of slopes
- Unsaturated Soil Mechanics
- Ground improvement Techniques
- Seismic Hazard Analysis and Ground motion simulations
- Soil Stabilization
- Offshore Foundation
- Seismic soil-structure Interaction
- Vegetation soil Interaction
- Geoenvironmental Engineering

Software Application



Key Courses / Electives

- | | | |
|---|--|---|
| <ul style="list-style-type: none">• Advanced Soil Mechanics• Dynamics of Soil and Foundations• Advanced Foundation Engineering• Numerical Methods• Optimization Methods• Fuzzy Logic and Artificial Intelligence in Civil Engineering Applications• Computer Aided Design• Earthquake Engineering• Random Vibration• Finite Element Analysis | <ul style="list-style-type: none">• Computational Plasticity• Pavement Analysis and Design• Reinforced Soil Structures• Subsurface Investigation and Instrumentation• Earthquake Geotechnical Engineering• Elastic Analysis in Geotechnical Engineering• Soil-Structure Interaction• Rock Mechanics• Environmental Geotechnology | <ul style="list-style-type: none">• Applied Soil Mechanics• Ground Improvement Techniques• Geotechnical Practice for Waste Disposal• Expansive Soil• Mechanics of Unsaturated Soils• Landslide Engineering• Applied Seismology• Geo-energy Systems |
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INFRASTRUCTURE ENGINEERING AND MANAGEMENT

Key Research Areas

- Sustainability in construction
- Cost of Quality
- Durability in concrete
- Geopolymer concrete
- BIM and construction automation
- Resource optimization
- Construction workers
- PPP projects
- Infrastructure Management

Software Application



Key Courses/ Electives

- Infrastructure Planning
- Project Management in Construction
- Construction Methods and Equipment Management
- Financing Infrastructure Projects
- Advanced Concrete Technology
- Project Management Laboratory
- Numerical Methods
- Optimization Methods
- Quality and Safety Management in Construction
- Advanced quantitative techniques in construction management
- Advanced Structural Design
- Urban Transportation Systems Planning
- Water Distribution and Wastewater Collection System Design
- Solid and Hazardous Waste Management
- Environmental Management
- Transportation System Management
- Public Transportation Systems Planning
- Water Resources Systems Analysis, Planning and Management
- Stochastic Calculus for Finance
- Mathematics of Financial Derivatives

STRUCTURAL ENGINEERING

Key Research Areas

- Seismic control of a structure
- Earthquake engineering
- Continuum damage mechanics
- Seismic strengthening
- Wind-induced vibration and control
- Structural health monitoring
- Fracture mechanics
- Finite Element Analysis
- Durability of structures

Software Application

STAAD.Pro

SAP2000

ETABS

**SIMULIA
ABAQUS**

Ansys

MATLAB

Key Courses / Electives

- Continuum Mechanics
- Finite Element Method
- Structural Dynamics
- Structural Engineering Laboratory
- Advanced Structural Design
- Analysis and Design of Bridges
- Numerical Methods
- Optimization Methods
- Advanced Mathematics for Engineers
- Statistical Methods in Civil Engineering
- Plates, Shells and Elastic Stability
- Fuzzy Logic and Artificial Intelligence in Civil Engineering Applications
- Mechanics of Composite Materials
- Computer Aided Design
- Earthquake Engineering
- Random Vibration
- Reliability Based Structural Design
- Computational Plasticity
- Computational Structural Mechanics
- Dynamics of Bridges
- Advanced Concrete Technology
- Engineering Fracture and Fatigue Mechanics
- Financing Infrastructure Projects

TRANSPORTATION SYSTEMS ENGINEERING

Key Research Areas

- Sustainable transportation planning
- Transportation demand management
- Traffic flow modeling
- Rigid and flexible pavement
- Performance testing and modeling of asphalt concrete
- Geometric design of transportation facilities
- Highway quality control and pavement material
- Accident Analysis and road safety
- Pavement analysis and design

Software Application



Key Courses / Electives

- Urban Transportation Systems Planning
- Pavements Materials
- Pavement Analysis and Design
- Traffic Engineering
- Classical Matrix Methods for Structural Analysis and Introduction to FEM
- Numerical Methods
- Optimization Methods
- Design and Construction of Rural Roads
- Bridge Engineering
- Geometric Design of Transportation Facilities
- Pavement Evaluation, Rehabilitation and Maintenance
- Highway Construction Practice
- Transportation System Management
- Economic Evaluation and Analysis of Transportation Projects
- Geographical Information System and Remote Sensing in Transportation Engineering
- Traffic Flow Modelling and Simulation
- Public Transportation Systems Planning
- Applied Soil Mechanics
- Ground Improvement Techniques
- Road Safety Engineering

WATER RESOURCE ENGINEERING AND MANAGEMENT

Key Research Areas

- IDF curve development
- River linking projects
- Rainfall clustering and zoning
- Sediment influx management
- Groundwater Quality
- Rainfall modeling
- River Hydraulics
- Hydrodynamic of alluvial channels
- Watershed and Irrigation management
- Dam-break analysis

Software Application



Key Courses / Electives

- Surface Water Hydrology
- Advanced Hydraulic Engineering
- Advanced Fluid Mechanics
- Principles of Water Quality and EIA
- Subsurface Hydrology
- Numerical Methods
- Optimization Methods
- Water Resources Systems Analysis, Planning & Management
- Environmental Hydrology
- Fuzzy Logic and Artificial Intelligence in Civil Engineering Applications
- Watershed Management and Remote Sensing Applications
- Computational Methods in Hydraulics and Environmental Engineering Applications
- Water Power Engineering
- Transient Flow Analysis
- Flow and Transport Processes in Fractured Media
- Stochastic Hydrology
- Introduction to Multiphase Flow in Porous Media
- Sediment Dynamics in Fluvial Systems
- Environmental Management of Water Resources
- River Engineering
- Pollution and Contaminant Flux in Water Environment
- Genetic Algorithms

For more information in research areas and laboratories, please visit [HERE](#)

RESEARCH LABORATORIES

- Concrete Laboratory
- Computational Laboratory
- Earth System Science and Engineering Laboratory
- Environmental Engineering Laboratory
- Fluid Mechanics Laboratory
- Geoinformatics Laboratory
- Geotechnical Engineering Laboratory
- Hydraulic Engineering Laboratory
- Pavement Evaluation Laboratory
- Infrastructure Engineering and Management Laboratory
- Structural Engineering Laboratory
- Transportation Systems Laboratory
- Water Resources Engineering Laboratory
- Water Quality Laboratory



SPONSERED RESEARCH PROJECTS

PROJECT TITLE

1. Pre-opening Safety audit of Shillong Bypass Connecting NH-40 and NH-44
2. Resistance Characteristics of Alluvial Channel with Mobile Bed vegetation
3. Safer roads for Safer childhood
4. Characterisation of sludge from secondary treatment plant of Nagaon Paper mill
5. Suitability of water sample for construction purpose
6. Road Surface Quality Assessment of Selected Border Roads Sections of India through Advanced Remote Sensing Technique
7. Determination of the suitability of material as blanketing material
8. Study of Glacial Dynamics and Sustainable Hydrological Resources in Arunachal Himalaya
9. Evidence comparison between Tharsis, Hawaii island volcanism and Deccan Volcanic Provinces based on geomorphology and lithology
10. Road Surface Quality Assessment of Selected Border Roads Sections of India through Advanced Remote Sensing Technique
11. Preparation of Feasibility Study Report on Measures for Flood Mitigation and Control of Riverbank Erosion/ Shifting of River Course of Jia Bharali, Assam
12. Smart Hybrid Fiber Reinforced Polymer Composite Strengthening System for Civil Infrastructure
13. Enhancing Construction Safety, Sustainability, and Project Performance Using Cutting-Edge Technologies

SPONSORING AGENCY

- National Highways Authority of India
- Ministry of Earth Sciences, Government of India
- IFRC, Geneva, Switzerland
- HPCL, Kagaznagar
- M/s: NTPC
- Defense Terrain Research Laboratory, DRDO, MoD (Govt. of India)
- Northeast Frontier Railway
- National Mission for Sustaining the Himalayan Ecosystem, Dept. of Science & Technology, Govt. of India
- ISRO (Indian Space Research Organization)
- Defence Research and Development Organisation (DRDO), MoD, Gol
- Water Resources Department, Government of Assam
- SPARC
- NBCC (India) Limited

SPONSERED RESEARCH PROJECTS

PROJECT TITLE

SPONSORING AGENCY

- | | |
|--|---------------------------------|
| 14. Development and Performance Evaluation of Ready Mix Thermal Insulation Foam Plasters for Energy Efficient Structures | • DST-SERB |
| 15. Attenuation Ability of Municipal Solid Waste Landfill Liners for Viral Pathogens | • SERB, DST, Gol |
| 16. Geopolymerization of fine fraction obtained from biomining of legacy waste from old MSW dumpsite | • TDP, DST |
| 17. Environmental Audit of City Action Plan under the National Clean Air Programme for Guwahati and Nalbari cities | • Pollution Control Board Assam |
| 18. Revision of IS 3114: 1994 Code of Practice for Laying of Cast Iron Pipes (Second Revision) | • BIS |
| 19. Emission Inventory, source apportionment, carrying capacity studies for five non-attainment cities of Assam | • CPCB, PCBA |
| 20. Performance study of primary clarifier of ETP in HPCL, Kagaznagar. | • HPCL, Kagaznagar |

YEAR AT A GLANCE

- IIT Guwahati has achieved global recognition by securing the 42nd rank worldwide in the 'Research Citations per Faculty' category of the esteemed QS World University Rankings 2024-25.
- IIT Guwahati ranked 7th in India in the Engineering category as per NIRF Rankings 2024.
- The Department of Civil Engineering, IIT Guwahati feels proud in securing QS World Rank 151-200 for the year 2024
- Our Post Graduate Students from Civil Engineering have secured the prestigious DAAD Scholarship in Germany for the year 2023 Achieved 3rd place in the INTER IIT Civil Conclave 2022, held at IIT Roorkee
- Several faculty members have been nominated and invited to join as External Academic Members of the PhD Board of Studies
- Second prize in the Best Paper Presentation Competition category at the Indian Geotechnical Conference 2022 (IGC 2022)
- Winner of IITB-ISRO-AICTE Mapathon-2021 for the work entitled "Temporal changes in Majuli island due to Erosion and Sedimentation" Best paper award in 8th IEEE CONECCT 2022 in Geoscience and Remote Sensing Technologies.
- Received 2nd Best Student Paper award for submission titled "Optimization of Alum-Based Coagulation Flocculation for Solid Liquid Separation in Swine Wastewater Treatment and Valorization of Sludge for Brick Manufacturing" in ENVIRONMENT 2024 (An International Conference on Environmental Challenges, Opportunities and Sustainable Solutions) held on 9-11 December 2024 conducted by Centre for Environment, IIT Guwahati.
- 1st Runner-up Position in the Finnovation: PSB Hackathon Series 2025, jointly organized by the State Bank of India and IIT Guwahati under the Government of India initiative by the Department of Financial Services.
- IIT Guwahati's Waste Management Research Group: Architects of Sustainable Solutions for a Greener Tomorrow
 - The researchers have developed a novel technology to minimize biodegradation time, yielding vermicompost in 27 days for urban waste management and reduces the waste volume by 71% and producing a nutrient-rich soil conditioner with 4.2% total nitrogen.

INTERNSHIPS

Our students have undergone internships and training in industries and universities around the world. We believe in equipping our students with real-world experiences that prepare them for the challenges of the professional landscape. Through our extensive network of industry partners and esteemed universities, we offer unparalleled internship opportunities that expose our students to diverse cultures, cutting-edge technologies, and innovative practices.

PROJECT COLLABORATIONS

- SP Singla constructions
- Engineering Consultants Group, Dubai
- Gammon India Ltd, Guwahati
- RITES India Ltd, Kolkata
- Shapoorji Pallonji & Co Ltd
- Maritime Research Centre,
- Pune Central Mine Planning and Research Institute, Ranchi
- Shree Cement
- National hydropower corporation at LSEEP, Assam
- Ayesa India Pvt. Ltd



OUTREACH ACTIVITIES

- 8ICRAGEE (8 International Conference on Recent Advances in Geotechnical Earthquake Engineering) was organized by Indian Society of Earthquake Technology (ISET) from 11 to 14 December 2024 at IIT Guwahati in association with Department of Civil Engineering IIT Guwahati and Department of Earthquake Engineering, IIT Roorkee.
- Departmental talk was held as a part of Research and Industrial Conclave 2024 by Civil Department.
- 5th International Conference on Waste Management – RECYCLE 2025, was held on June 5–6, 2025, at the Conference Centre, IIT Guwahati.
- The Indian Lean Construction Conference – ILCC 2024 was held in Guwahati, India from 24th to 27th November 2024.
- 1-day Workshop on "Developments in Seismic Retrofitting of Buildings" was organized by the Department of Civil Engineering at IIT Guwahati on 04 August 2025.
- Workshop on “Innovative approaches to Sustainable Construction: Materials and Infrastructure development” was organized on 7th and 8th November, 2024 at IIT Guwahati.



PAST RECRUITERS



PAST RECRUITERS

SAMSUNG



IBM

Ansys



**WELLS
FARGO**

Razorpay



BCG



Deloitte.

Capgemini

Infosys

BARCLAYS

amazon



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