



**Society of  
Civil Engineers**  
Indian Institute of Technology, Kanpur



# **DEPARTMENT OF CIVIL ENGINEERING**

## INDIAN INSTITUTE OF TECHNOLOGY KANPUR





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# OVERVIEW

Established in 1961, the Department of Civil Engineering at IIT Kanpur has consistently produced high-quality technical professionals essential to industry, R&D organisations, and academia. The Department offers a range of Civil Engineering programs, including B. Tech., B. Tech.-M. Tech. Dual degree, MS (Research) and M. Tech. Degree in Civil Engineering. The Masters's program offers degrees in six specialisations, i.e., Environmental Engineering, Geoinformatics, Geotechnical Engineering, Hydraulics & Water Resources Engineering, Structural Engineering, and Transportation Engineering. The Department also has a vibrant PhD program in the specialisations mentioned earlier and in Infrastructure Engineering and Management. The Department's academic activities emphasise a deep understanding of fundamental principles, the development of the creative ability to handle the real-life challenges of Civil Engineering, and the analytical ability to solve interdisciplinary problems.

The Department also encourages its students to engage in extra-curricular and co-curricular activities, which help develop team spirit and develop organisational skills. The Department's alums hold prestigious positions globally in different sectors like academia, research organisations, and industry.

The faculty of the Department is actively engaged in applied research and consultancy and provides high-quality technical assistance to various organisations through various R&D projects and consultancy. Lately, the Department has attracted a substantial amount of sponsored research funding from government and private organisations and delivered excellent output in terms of implementable solutions for the benefit of society.

# VISION

The broad goals of the department can be stated as international recognition for excellence in research and teaching and ranking as the top Civil Engineering department in the country and, therefore, stay as the top choice of the graduate students for higher education and faculty for their careers. International recognition in research is achieved through good quality publications in reputed journals and through collaborative research, and that in teaching depends on the performance of our graduates in terms of becoming the leaders in respective fields (in industry, academia, and other areas). On both these fronts, we seem to be doing fine but will need to strive for excellence.

To be ranked as the top CE department in the country, we need to balance our teaching, research, and consultancy in such a way that prospective employers prefer our undergraduate and graduate students. Also, prospective postgraduate students and faculty prefer our department, and the industry looks up to us to help them in technical issues. For this, the CE department is focusing on the role of technology in creating smart solutions for existing and emerging challenges within our country.

Thus, in addition to our existing Civil Engineering knowledge, a few recent tools like Artificial Intelligence, Machine Learning, and IoT are being employed both in teaching and research to tackle challenges such as smart traffic management, monitoring of contaminants in different media, process controls, deployment of smart sensors, energy efficient and smart waste management systems including the use of innovative material for construction activities with an overall goal of providing a sustainable future.

# MESSAGE FROM HOD

Greetings!

Step into a world of excellence and innovation at the Department of Civil Engineering, IIT Kanpur, where a legacy of over six decades meets the aspirations of the future. Since our inception in 1961, we have been crafting the finest technical minds that industry, research, and academia crave. In the midst of changing technological horizons and evolving industries, the need for brilliant youthful minds with exceptional analytical prowess, an open mind, and inventive problem-solving skills becomes more apparent than ever before. Our talented graduates embody this spirit and are actively seeking opportunities that will propel them to unleash their full potential upon the world.

Here, at the Department of Civil Engineering, our mission is to foster comprehensive skill development in students. Through a rigorous curriculum, we offer a wide array of undergraduate and postgraduate courses that cater to the evolving demands of the field. Furthermore, each UG student is also required to take 49 course-credits in Humanities and Social Sciences department which greatly enhances their outlook towards the society and its needs. PG students, who are admitted at IITK after a very tough entrance procedure, undergo advanced coursework and get exposure to research under the able guidance of faculties who themselves are renowned researchers in their respective fields.

The department takes immense pride in encouraging students to participate in a plethora of extracurricular activities spanning sports, culture, dramatics, and music, among others. These endeavours enable them to refine their skills and even manage events within the IIT community, fostering a well-rounded personality.

I am confident that our team of placement coordinators will facilitate a smooth and pleasurable hiring process. We are committed to continuous enhancement and welcome any feedback from our esteemed recruiters. Recruiters are once again welcomed to the Department of Civil Engineering. We look forward to your participation in the recruitment drive and wish you the very best!

**Warm Regards,**

**Dr. Priyanka Ghosh**

**Head of Department, Civil Engineering**

**IIT Kanpur**

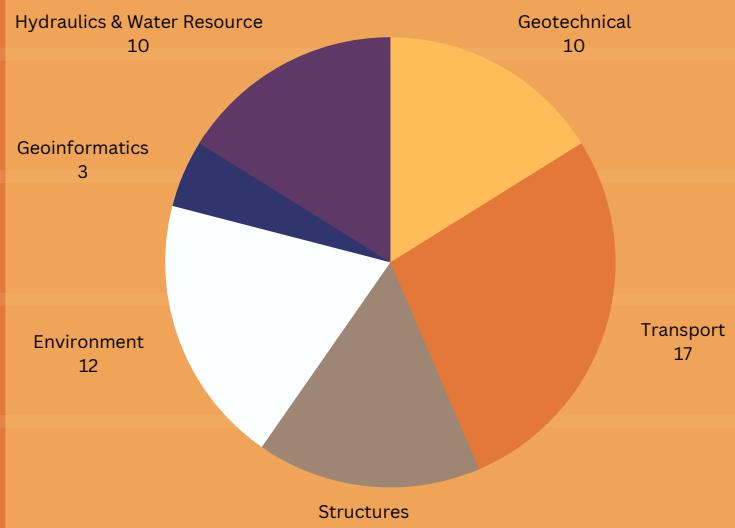
# STUDENT DEMOGRAPHICS

B.Tech

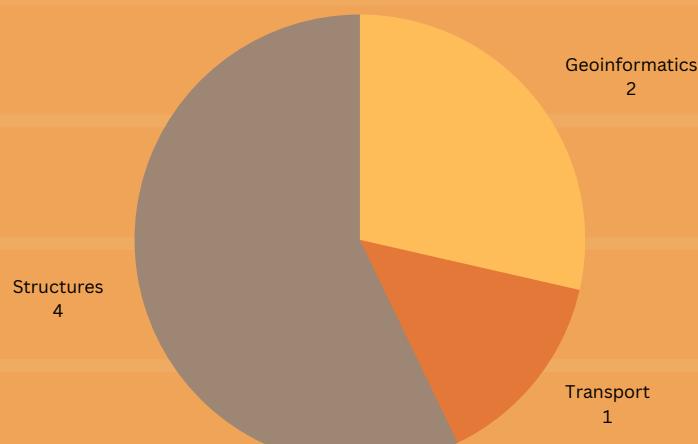


Y20  
150

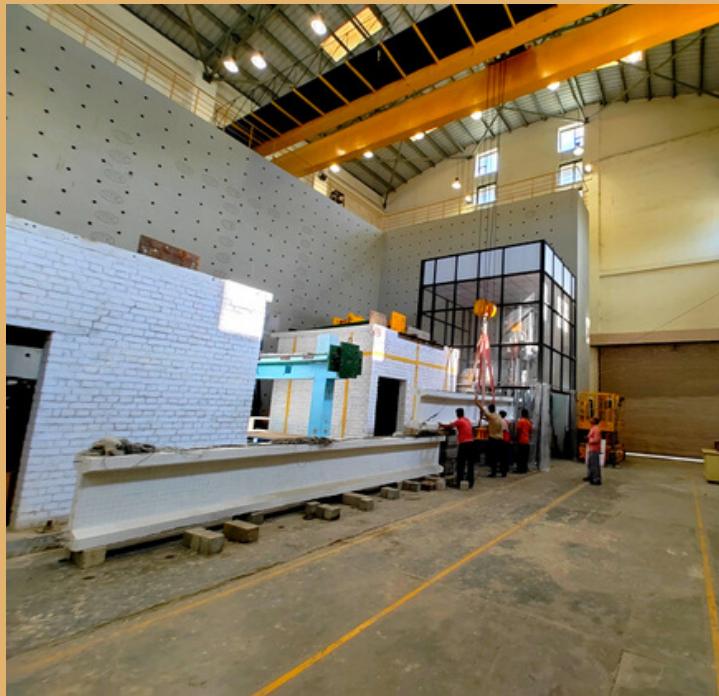
M.Tech



Dual Degree(B.tech + M.tech)



# SPECIALIZATIONS



## Structural Engineering

The Structural Engineering department at IIT Kanpur engages in diverse activities including education, research, and advisory services in domains like Design, Testing, and Health Monitoring. The experienced faculty, with expertise in **Dynamics, Finite Elements, Materials, and Stability**, provides valuable guidance to students and research. The department's 1500 sq. meter laboratory houses advanced equipment for studying load-deformation characteristics of structures, covering pre-peak behavior to post-peak strength and deformability, including failure mechanisms. A pioneering **Pseudo Dynamic Test Facility** investigates seismic behavior of prototype structural models up to three stories high. **Notable projects** include fatigue testing of Nagpur Metro Rail, studying distress in Yamuna Bridge, evaluating energy dissipation devices, and exploring structural control through real-time simulations.



## Transportation Engineering

The Transportation Engineering department at IIT Kanpur offers an exciting journey of innovation and expertise. With an accomplished faculty of 8 experts, the department delves into diverse research areas, spanning **materials and pavement engineering** to cutting-edge domains like **intelligent transportation systems**, network optimization, road safety, and infrastructure management.

The Transportation Engineering Laboratory is a hub of advanced facilities, including a state-of-the-art **instrumented vehicle** with LiDAR, video cameras, IMU GPS units, GSFS and more sensors.

**Notable projects** within the department include the deployment of camera-based traffic enforcement solutions and parking management strategies for **Kanpur Smart City**, smart traffic intersection monitoring using **computer vision**, and a joint research study on recycling asphalt materials in road construction with Aalto University.

# SPECIALIZATIONS



## Environmental Engineering

The Environmental Engineering specialization at IIT Kanpur explores the intersection of civil engineering and environmental sustainability. Focusing issues like water resources, air quality, waste management, sustainable infrastructure and emerging areas like **ESG** and **LCA**.

Our Lab features cutting-edge instruments like ICP-MS, ICP-OES, and MP-AES for **elemental analysis**, and CHNOS Analyzer, GC-MS, and UV-Vis Spectrophotometers for **intricate analyses**. And other equipments like PM Sampler, Weather Monitoring Station, Zeta Potential Analyzers, and many more.

**Major projects** include wastewater analysis under **Namami Gange**, technology assessment for emissions control, air quality modeling, smartphone-based sensor development for water pollution, and studies on carbon's influence on climate change.



## Geoinformatics Engineering

Geoinformatics, is a multidisciplinary and prominent domain at IIT Kanpur. The domain boasts experienced faculty with expertise in geodesy, LiDAR, photogrammetry, and satellite systems. Additionally, it manages the **National Centre of Geodesy**, supported by the **Department of Science and Technology (DST)**, to advance geodetic activities.

The department hosts an **IGS station** for satellite data collection and GNSS processing software like **Bernese**, **GAMIT/GLOBK**, and mapping tools such as **ARCGIS** and **QGIS**. Instrumentation includes Velodyne LiDAR, Trimble GNSS Rx system, and various surveying tools.

**Notable projects** includes geoid model determination, Earth rotation and polar motion studies, LiDAR data simulation, positioning algorithms for satellite systems, LiDAR point cloud processing, and applications of high-resolution LiDAR data in solar energy, water harvesting, and 3D city modeling. Collaborations with universities like **Curtin** and **NCTU Taiwan** amplify research efforts.

# SPECIALIZATIONS



## Hydraulics & Water Resources Engineering

The Hydraulics and Water Resources Engineering field at IIT Kanpur is a prominent research and consultancy center. The specialization encompasses designing hydraulic structures, flood and drought forecasting, irrigation optimization, and water quality management.

The Hydraulics Laboratory's Experimental Apparatus range covers a broad spectrum, including Energy losses in pipes, hydraulic jumps, pipe fittings and more. The collection of Instruments like current meters, echo-sounders, 3D flow measurement equipment, isotope analyzers, and weather stations. An Experimental Agriculture Plot and Porous Media Flow Lab further augment the lab's capabilities.

**Notable projects** include fog predictions using data science, establishing a Critical Zone Observatory in the Ganga Basin for water balance and quality, hydraulic and geotechnical investigations of river bridges, and hydraulic model studies of infrastructure projects like the Pipra Ghat Bridge.



## Geotechnical Engineering

The Geotechnical Engineering specialization encompasses diverse fields such as Foundation Engineering, Geotechnical Earthquake Engineering, Ground Improvement Techniques, Rock Mechanics, and more.

The Geotechnical laboratory houses advanced testing equipment and a computer center with cutting-edge software like **PLAXIS 2D**, **PLAXIS 3D**, **GEO5**, and **FLAC3D**.

Notable projects include centrifuge modeling of embankments on geosynthetic encased stone columns, a low-cost vibration screening technique using bamboo for machine excitation in built-up areas, hydro-mechanical behavior studies of compacted soils under varied stress and saturation conditions, a multi-sensor approach for landslide monitoring, strategies for mitigating damage to buried structures from blast waves and seismic performance assessment of ash-filled MSE walls.

# SPECIALIZATIONS



## Infrastructure Engineering & Management

The IEM Department at IIT Kanpur specializes in a wide array of construction and infrastructure management areas. It covers Construction Management, including scheduling, contracts, quality, safety, economics, and financing. The department also focuses on Infrastructure Asset Management involving roads, bridges, dams, etc., encompassing maintenance, risk analysis, resilience, and performance optimization. They contribute to Infrastructure Creation with a focus on sustainable design, quality control, and environmental impact. Additionally, they're experts in Concrete Engineering, addressing durability, repair, and non-destructive testing. Overall, the department ensures robust infrastructure through comprehensive expertise in planning, maintenance, and innovation.

# EXTRA CURRICULARS



## Society of Civil Engineers

Indian Institute of Technology, Kanpur

Society of Civil Engineers, IIT Kanpur is a non-profit org, serving as a bridge between civil engineering students, industry and academia represented by alumni and professors of IIT Kanpur, respectively.



Students also plan, manage and execute various institutions' events and fests during their stay at IIT Kanpur outside the department.



Students  
Gymkhana



Science & Technology  
Council



Sports  
Council



Media & Cultural  
Council



Entrepreneurship  
Cell



Vox  
Populi



Antragini



Techkriti



Udghosh

# OUR ALUMS



Founder of Innovative Technical Solutions (ITSI), one of the strongest infrastructure & environmental businesses in USA.

**Dr. Devendra Shukla  
BT-1967**

Found & revolutionized the white cement industry in the India, first ever to computerize kiln operations with JK Cements using fuzzy logic system.



**Mr. Yadupati Singhania  
BT-1977**



He is credited with putting India on the world gas map. He currently serves as the CEO and MD of Petronet LNG. His notable contribution is worlds longest LNG Pipeline.

**Mr. Prabhat Singh  
BT-1980**

Mr. Vikas Kumar, a highly acclaimed IPS officer of Rajasthan cadre, credited with uprooting the menace of illegal mining in Eastern Rajasthan region.



**Mr. Vikas Kumar  
BT-1997**



He was the Project Director in the National Highways Authority of India (NHAI) at Koderma, Jharkhand. He was murdered for allegedly for his anti-corruption related actions in the Golden Quadrilateral highway construction project.

**Mr. Satyendra Kumar Dubey  
BT-1994**

Secretary General ACECC, consisting of 15 countries. He was the VP of CH2M HILL. First Indian American elected as the President of ASCE - EWRI.



**Dr. Uday P. Singh  
BT-1972**

# PAST RECRUITERS



**AIRBUS**

**ALSTOM**

**ABG**  
ABG Shipyard Limited

**TATA PROJECTS**  
Simplify.Create

**IFCONS**



**CATERPILLAR**

**Schlumberger**

**EATON**

**Thornton Tomasetti**

**egis**

**AECOM**

**ATKINS**

Member of the SNC-Lavalin Group



**LARSEN & TOUBRO**  
**OCEANEERING**

**HALLIBURTON**

**SMEC**

Member of the Surbana Jurong Group

**BUROHAPPOLD**  
ENGINEERING



**RioTinto**

**RAMBOLL**

**ExxonMobil**



**Trimble**

**GEO DATA**

**URS**



**M**  
MOTT  
MACDONALD

**UEM**

**Walmart**



A Navratna Company

**dar**



**ESSAR**

**IL&FS**



**WABAG**

**LERA**  
Consulting Structural Engineers

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