

# RELEVANT COURSES

## STRUCTURAL ENGINEERING

- Earthquake Analysis and Design
- Durability of concrete structures
- Engineering Mechanics
- Stability of structures
- Structural Health Monitoring
- Finite Element Methods

## HYDRAULICS AND WATER RESOURCE ENGINEERING

- Advanced hydraulics
- Advanced hydrology
- Introduction to AI
- Eco hydrology
- River Science
- Computation techniques in hydraulics

## GEOTECHNICAL ENGINEERING

- Foundation Engineering
- Foundation Dynamics
- Advanced Geotech. Engineering
- Geotechnical Measurements and exploration
- Ground Improvement Techniques

## TRANSPORTATION ENGINEERING

- Characterization of Pavement materials
- Pavement analysis and design
- Analysis and design of transportation infrastructure
- Airport systems planning and design
- Traffic Engineering
- Urban Transportation Systems Planning



## **INFRASTRUCTURE ENGINEERING & MANAGEMENT**

- Infrastructure Asset Management
- Special Concretes
- Construction Management
- Basic Quality and Safety in construction
- Infrastructure Financing
- Construction Methods
- Principles of Environmental Management

## **ENVIRONMENTAL ENGINEERING & MANAGEMENT**

- Physico-Chemical Treatment of water
- Water supply and wastewater disposal systems
- Environmental quality & pollution monitoring
- Air Pollution and its control
- Solid waste management

## **GEOINFORMATICS**

- Introduction to Remote sensing
- Introduction to Geodesy
- Introduction of GIS
- Laser scanning technologies and applications
- Satellite data processing and its application
- Geospatial data processing
- Global Navigation Satellite System(GNSS)

Students also have learning edge through courses in various softwares like SAP, QGis, ArcMap, Matlab.

Along with courses, students also complete Survey Camp held at Nainital. Many talks and seminars are also organized by Industries, tie-up institutes( like Utokyo, Nihong University, University of Buffolo, etc).



# FACULTIES

## Structural Engineering

- **Vinay K Gupta, Ph.D. (Arizona, Tucson)**  
Area of Interest: Random vibrations, Earthquake engineering.
- **Sudhir Mishra, Ph.D. (UTokyo)**  
Area of Interest: Durability and deterioration of concrete structures, Non-destructive testing, Concrete materials.
- **Sudhir K Jain, Ph.D. (CalTech)**  
Area of Interest: Earthquake Engineering, Structural Dynamics
- **Sudib K Mishra, Ph.D. (Arizona, Tucson)**  
Area of Interest: Multiscale, Multiphysics in Mechanics and Materials, Stochastic, Robust Optimization of Structures, Uncertainty, Reliability of Structures, Structural Damage and Health Assessment.
- **Suparno Mukhopadhyay, Ph.D. (Columbia)**  
Area of Interest: Structural Identification and Health Monitoring, Structural Dynamics, Earthquake Engineering
- **Durgesh C Rai, Ph.D. (Michigan, Ann Arbor)**  
Area of Interest: Experimental seismic behavior of structures, Seismic evaluation and strengthening, Energy dissipation devices, Masonry and Steel-RC composite members
- **Samit Rai Chaudhuri, Ph.D. (California, Irvine)**  
Area of Interest: Structural dynamics and earthquake engineering, Performance evaluation of structural and nonstructural components and systems, Performance-based design and structural rehabilitation, Seismic soil-structure interaction, Structural health monitoring, Structural testing.
- **Harish K Venkatnarayanan, Ph.D. (Clemenson)**  
Area of Interest: Microstructure of cement based material, Material characterization techniques, Advanced cementitious materials, Sustainable construction materials, Repair and rehabilitation of concrete structures.



## Geotechnical Engineering

- **Rajesh Sathiyamoorthy, Ph.D. (IITB)**  
Area of Interest: Geo-Environmental Engineering, Ground Improvement Techniques, Numerical and Physical Modelling Techniques.
- **Prishati Raychowdhury, Ph.D. (California, San Diego)**  
Area of Interest: Soil dynamics, Geotechnical earthquake engineering, Seismic soil-structure interaction
- **Nihar R Patra, Ph.D. (IITKGP)**  
Area of Interest: Pile foundations, Soil structure interactions and Ground Engineering, Soil Arching, Liquefaction Potential Evaluation.
- **Priyanka Ghosh, Ph.D. (IISc, Bangalore)**  
Area of Interest: Bearing capacity of foundations and Stability of slopes under both static and seismic cases, Method of characteristics, Upper bound limit analysis and Finite element analysis, Liquefaction analysis
- **Arghya Das, Ph.D. (University of Sydney)**  
Area of Interest: Constitutive modeling of geomaterials, Micromechanics of granular materials, Bifurcation & instability, analysis in geomaterials, Numerical & physical modeling in geotechnical engineering.

## Hydraulics and Water Resource Engineering

- **Saumyen Guha, Ph.D. (Princeton)**  
Area of Interest: Anaerobic Wastewater Treatment, Bioremediation, Microbial Ecology, Fate and Transport of Heavy Metals in the subsurface, Nutrient uptake in plants.
- **Ashu Jain, Ph.D. (Kentucky)**  
Area of Interest: Rainfall-Runoff Modelling, Surface Hydrology, Stochastic Hydrology, Neural Networks and Genetic Algorithms.
- **Richa Ojha, Ph.D. (Purdue)**  
Area of Interest: Flow and transport in porous media, Scaling of hydrological processes, Hydrologic extremes
- **Rajesh Srivastava, Ph.D. (Arizona, Tucson)**  
Area of Interest: Flow and transport through variably saturated porous media.
- **Shivam Tripathi, Ph.D. (Purdue)**  
Area of Interest: Statistical hydrology, Sediment transport, Eco-hydrology.



## Transportation Engineering

- **Partha Chakraborty, Ph.D. (Delaware)**  
Area of Interest: Traffic flow theory and Traffic Engineering, Travel Demand, Transit Systems and Vehicle Routing, Transport System Evaluation and Management.
- **Animesh Das, Ph.D. (IITKGP)**  
Area of Interest: Pavement materials, Pavement design, Pavement evaluation and maintenance.
- **Priyanka Ghosh, Ph.D. (IISc, Bangalore)**  
Area of Interest: Bearing capacity of foundations and Stability of slopes under both static and seismic cases, Method of characteristics, Upper bound limit analysis and Finite element analysis, Liquefaction analysis
- **Arghya Das, Ph.D. (University of Sydney)**  
Area of Interest: Constitutive modeling of geomaterials, Micromechanics of granular materials, Bifurcation & instability, analysis in geomaterials, Numerical & physical modeling in geotechnical engineering.

## Infrastructure Engineering & Management

- **Sudhir Mishra**
- **Harish K Venkatnarayanan**
- **Vinod Vasudevan, Ph.D. (Nevada, Las Vegas)**  
Area of Interest: Traffic safety, Sustainable transportation, Highway financing, Policy analyses.
- **Syam Nair, Ph.D. (Texas A&M)**  
Area of Interest: Pavement materials, Pavement maintenance and rehabilitation, Recycling of infrastructure materials, Chemical stabilization of soils/aggregate, Utilization of industrial by-products
- **Purnendu Bose, Ph.D. (Massachusetts, Amherst)**  
Area of Interest: Physico-chemical processes for water and waste water treatment, Advanced oxidation processes for water and wastewater treatment, Abiotic remediation of groundwater resources.
- **Mukesh Sharma, Ph.D. (Waterloo)**  
Area of Interest: Air quality modelling and management, Fate processes of organic pollutants and parameter estimation.



- **Onkar dixit, Ph.D. (Cambridge)**  
Area of Interest: DIP, GIS, and Remote Sensing applications, Pattern recognition.
- **Nihar R Patra**

inorganic contaminant fate and transport through surface complexation and flow-through reactor modeling, Develop tools to target contaminant remediation in natural as well as engineered environments.

## **Environmental Engineering & Management**

- **Purnendu Bose**
- **Mukesh Sharma**
- **Anubha Goel, Ph.D. (Maryland)**  
Area of Interest: Characterization of emissions from vehicular exhaust, Size segregated distribution of particulates and organic pollutants on aerosols, Environmental modeling, Fate and transport of pollutants, Solid Waste Management
- **Tarun Gupta, Sc.D. (Harvard)**  
Area of Interest: Development of instruments for aerosol measurement, engineering control of particles in ambient and indoor settings, physico-chemical characterization of atmospheric pollutants, personal exposure assessment and health effects of inhaled particles.
- **Abhas Singh, Ph.D. (Washington, St.Louis)**  
Area of Interest: Environmental geochemistry of heavy metals and inorganic contaminants, Predict

- **Vinod Tare, Ph.D. (IITK)**  
Area of Interest: Water and wastewater treatment, modelling and simulation of environmental systems.
- **Sacchida N Tripathi, Ph.D. (Purdue)**  
Area of Interest: Aerosol Optical Properties, Aerosol Microphysical properties, Cloud Microphysical Properties and Cloud Electrical Properties, Fog Vision, Electrical Properties of Mars atmosphere..

## **Geoinformatics**

- **Onkar Dixit**
- **B. Nagarajan Ph.D (Ohio)**
- **Bharat Lohani, Ph.D. (Reading)**  
Area of Interest: 3D laser imaging and LCS measurement, Propagation modelling using high resolution LiDAR data (flood, sound, GPS signal), LiDAR simulator-airborne and spaceborne,

