

Civil and Environmental Engineering

Department Information

- **Interim Department Chair:**
Xuefeng (Michael) Chu, Ph.D., F.EWRI
- **Graduate Program Coordinator:**
Kalpana Katti, Ph.D.
- **Department Location:**
201 Civil and Industrial Engineering Bldg.
- **Department Phone:**
(701) 231-7244
- **Department Web Site:**
www.ndsu.edu/cee/ (<http://www.ndsu.edu/cee/>)
- **Application Deadline:**
February 15 for fall admission; September 15 for spring admission
- **Credential Offered:**
Ph.D., M.S.
- **English Proficiency Requirements:**
TOEFL iBT 71, IELTS 6; Duolingo 100

Program Description

The Department of Civil, Construction and Environmental Engineering offers the M.S. and Ph.D. degrees in civil engineering and the M.S. degree in environmental engineering. Also, the College of Engineering offers a program leading to a Ph.D. degree in engineering in which civil engineering is a possible area of specialization. The department also participates in several interdisciplinary programs such as Environmental and Conservation Sciences, Materials & Nanotechnology and Transportation and Logistics.

Specialty areas in the M.S. and Ph.D. degrees in civil engineering include construction, environmental, geotechnical, materials, structural, transportation, and water resources engineering. Other related areas are also accommodated. The academic and research foci are tailored to individual needs and interests. To complement the major area of study, additional courses are often selected from other disciplines. The programs are designed to advance the technical knowledge, competence, and interdisciplinary understanding of the students and to prepare them for entering or advancing within the civil engineering profession.

Application to the Civil Engineering program is open to qualified graduates of universities and colleges of recognized standing. In addition to the Graduate School admission requirements, the applicant must have adequate preparation in civil engineering. A master's degree in civil engineering is preferred for applicants to the Ph.D. program.

Financial Assistance

Research and/or teaching assistantships may be available. Applicants are considered on the basis of scholarship, potential to undertake advanced study and research, and financial need. To be considered for an assistantship, a completed Graduate School application, official transcripts, and three letters of reference (and TOEFL results for international applicants) must be submitted to the Graduate School.

For teaching assistantships, TOEFL and additional requirements for eligibility can be found on the Graduate School webpage.

The Master of Science degree is offered in the thesis format. This format emphasizes research, and the ability to analyze and interpret data and to prepare a scholarly thesis. The student and adviser develop a program of study consisting of at least 30 credit hours of graduate level material to meet individual educational goals. An overall GPA of 3.0 or better must be maintained. An oral defense of the research-based thesis is required.

The Doctor of Philosophy degree requires a total of 90 credits beyond the baccalaureate degree in civil engineering with an overall GPA of 3.0 or higher (60 credits beyond an M.S. degree in Civil Engineering or a sub-area of Civil Engineering) for graduation. A dissertation advisory committee should be formed and a plan of study should be filed by the end of first year after admission. A minimum of 30 hours of additional course work chosen by the student and his/her advisory committee from appropriate existing Civil Engineering graduate courses, new courses, and courses outside the department must be completed.

An M.S. degree from another institution may substitute for up to 30 credits of the 90 credits required; however, suitability of transfer or use of courses and research credits in the plan of study would be decided by the adviser and advisory committee.

A comprehensive preliminary exam is administered after completion of the greater portion of the course work. The committee chair will coordinate the examination. The format and duration will be determined by the committee. The student will present a research proposal within one year after the

preliminary examination. A minimum of 30 and a maximum of 40 credit hours can be earned for research, preparation, and defense of a dissertation in Civil Engineering. A minimum of 12 credit hours in a minor or cognate area as deemed appropriate by the student and the advisory committee may be completed by the student. The student will defend his/her dissertation in a final examination attended by the advisory committee members and other academics.

Beena Ajmera, Ph.D.

Virginia Polytechnic Institute and State University, 2015

Research Interests: Geotechnical Earthquake Engineering, Static and Dynamic Behavior of Soils and Rocks, Static and Dynamic Laboratory Soil Testing, Fundamental Behavior of Geomaterials from Mineralogical and Chemical Analyses, Use of Recycled Materials in Soil Modification, Ground Improvement Techniques, Soil and Rock Slope Stability

Achintya N. Bezbaruah, Ph.D.

University of Nebraska-Lincoln, 2002

Research Interests: Environmental sensors, Recalcitrant and micro pollutants, Contaminant fate and transport, Small community water and wastewater treatment, Environmental management

Xuefeng (Michael) Chu, Ph.D.

University of California, Davis, 2002

Research Interests: Watershed Hydrologic and Environmental Modeling, Overland Flow and Infiltration, Integrated Modeling of Flow and Contaminant Transport

Ying Huang, Ph.D.

Missouri University of Science & Technology, 2012

Research Interests: Structural Health Monitoring/Smart Structures for Transportation Infrastructure, Intelligent Transportation Systems, Applications of Adaptive and Smart Materials, Finite Element Modeling and Multi-Hazard Assessment and Mitigation

Syed Md Iskander, Ph.D.

Virginia Polytechnic Institute and State University, 2019

Research Interests: Sustainable Waste Management: Food Waste Treatment, Landfill Leachate Treatment, Environmental Health: Disinfection Byproducts, Antibiotic Resistance Genes, Microplastics, Water-Energy Nexus: Desalination, Membrane Fabrication, Advanced Oxidation, Environmental Biotechnology: Anaerobic Biotechnology, Bioelectrochemical Systems

Dinesh Katti, Ph.D., P.E.

University of Arizona, 1991

Research Interests: Geotechnical Engineering, Constitutive Modeling of Geologic Materials, Expansive Soils, Multiscale Modeling, Steered Molecular Dynamics, Computational Mechanics, Nanocomposite, and Bio-nanocomposites. Computational Biophysics

Kalpana Katti, Ph.D.

(Graduate Coordinator)

University of Washington, 1996

Research Interests: Advanced Composites, Nanomaterials, Biomaterials, Biomimetics, Materials Characterization and Modeling, Analytical Electron Microscopy, and Microspectroscopy, Bone Tissue engineering

Trung B. Le, Ph.D.

University of Minnesota

Research Interests: Hydraulics, Fluid Mechanics, Numerical Methods for Fluid-Structure Interaction

Wei Lin, Ph.D.

State University of New York at Buffalo

Research Interests: Water and Wastewater Treatment, Hazardous Waste Management

Zhibin Lin, Ph.D., P.E.

University of Wisconsin, 2010

Research Interests: Advanced Materials, High-Performance, Resilient and Sustainable Bridge Systems, Structural Durability and Structural Health Monitoring in Bridges and Earthquake Engineering

Kelly Rusch, Ph.D., P.E.

Louisiana State University, 1992

Research Interests: Microbial System Design and Modeling, Biofuels and Bioproducts, Engineering Education Research, Aquaculture Engineering, and Water and Wastewater Treatment.

David R. Steward, Ph.D., P.E., PG, FASCE

University of Minnesota

Research Interests: Engineering Mathematical and Computational Methods, Groundwater Flow and Analysis, Interdisciplinary Water Resources: Water and Society

Wenjie Xia, Ph.D.

Northwestern University, 2016

Research Interests: Multiscale Modeling of Structural Materials, Polymer and Nanocomposites, Granular and Soft Matters, Bioinspired Materials, Mechanobiology, Computational Mechanics, Data-Enabled Design of Multifunctional Materials

Mijia Yang, Ph.D., P.E.

University of Akron, 2006

China University of Mining and Technology, 1999

Research Interests: Advanced Materials, Structural Assessment, Solid Mechanics

Ravi Kiran Yellavajjala, Ph.D., P.E.

University of Notre Dame, 2014

Research Interests: Experimental and Theoretical Mechanics, Constitutive Modeling of Materials, Numerical Methods, Sensitivity Analyses of Structural Response, Forensic Failure Analysis and Advanced Visualization Techniques.

Adjunct & Emeritus

Eakalak Khan, Ph.D. (adjunct)

University of California, Los Angeles, 1997

Research Interests: Water and Wastewater Quality, Water and Wastewater Treatment, and Storm Water and Non-point Source Pollution

Denver D. Tolliver, Ph.D. (adjunct)

Virginia Polytechnic University, 1989

Research Interests: Transportation, Planning and Economics

Robert Zimmerman, Ph.D. (adjunct)

North Dakota State University, 1991

Research Interests: Water and Wastewater Treatment, Solid Waste

G. Padmanabhan, Ph.D. (emeritus)

Purdue University, 1980

Research Interests: Stochastic Hydrology, Water Resource Systems, and Hydrologic Modeling