GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING

DEPARTMENT OF CIVIL AND MATERIALS ENGINEERING

UIC UNIVERSITY OF ILLINOIS AT CHICAGO

PROGRAM DESCRIPTION

The Department of Civil and Materials Engineering offers programs of study leading to the **Master of Science** and **Doctor of Philosophy in Civil Engineering** degrees.

The Geotechnical and Geoenvironmental Engineering program emphasizes the fundamental concepts of soil properties and behavior as well as the development and/or application of modern methods of analysis and design for a wide range of civil and environmental engineering projects. The Program coverage is broad and it includes geotechnical aspects such as structural foundations, retaining structures, earth dams and levees, tunnels, site improvement, and offshore platforms and pipeline foundations. In addition, the Program includes geoenvironmental aspects such as landfills, impoundments, waste recycling and reuse, groundwater flow and contaminant transport, and contaminated site assessment and remediation. The Program provides flexibility and diversity that enables a comprehensive course curriculum and a wide range of research opportunities.

The Geotechnical and Geoenvironmental Engineering Laboratory houses standard soil testing equipment as well as specialized equipment to conduct cutting-edge research. Financial assistantships are available to qualified full-time students. Excellent job opportunities exist for our graduating students in both industry and academia.

DEGREE REQUIREMENTS

The specific M.S. and Ph.D degree requirements are the same for all civil engineering students. Refer to the Departmental and Graduate College Degree requirements for details. Generally, M.S. students require completion of 36 semester hours of coursework (9-10 courses). Some students elect the thesis option that requires a minimum 28 hours of course work (7-8 courses) and 8 hours of thesis. Beyond the M.S degree, Ph.D students require a minimum of 36 semester hours of course work and 36 semester hours of dissertation research. The specific research topic for M.S thesis or Ph.D dissertation is selected under the guidance of a faculty advisor. Commonly, the graduate students select their courses under the guidance of a faculty advisor:

COURSES

Geotechnical Courses:
CME405-Foundation Analysis and Design
CME407-Soil and Site Improvement Methods
CME505-Advanced Soil Mechanics
CME515-Embankments and Earth-Retaining Structures
Geoenvironmental Courses:
CME415-Geoenvironmental Engineering
CME425-Hazardous Waste and Site Remediation Engineering
CME516-Waste Management & Landfill Engineering
CME549-Flow and Contaminant Transport Modeling
Environmental Courses:
CME411-Chemistry for Environmental Professionals
CME 420-Environmental Analysis Laboratory
CME 422-Wastewater Treatment Design
CME 525-Bioremediation Design
CME 419-Air Quality Management I
Earth Sciences Courses:
EaES415-Environmental Geochemistry
EaES475-Hydrogeology
Other Courses:
CME434-Finite Element Analysis
GEOG481-Geographical Information Systems
Other courses are selected as approved by the advisor.

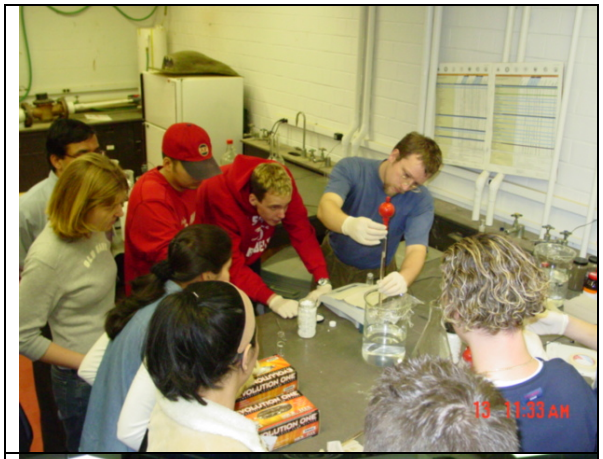
RESEARCH

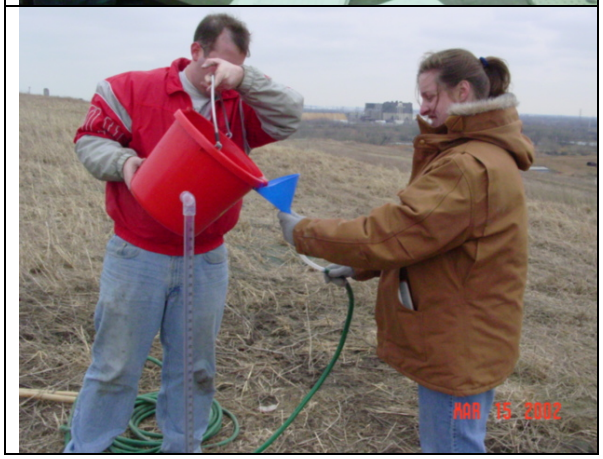
The University of Illinois-Chicago is a Research I University with over $250 million in annual research expenditures. Currently, geoenvironmental research is focused on in-situ remediation of contaminated soils and groundwater, waste containment systems (in-situ barriers, landfills and surface impoundments), beneficial reuse of waste and recycled materials in civil and environmental engineering, and durability of engineered geoenvironmental systems. Extensive research is being conducted on electrokinetic remediation of soils and groundwater contaminated by heavy metals and/or organic pollutants. Research is also being conducted to develop a rational approach for the design of in-situ air sparging sytems for the remediation of saturated soils and groundwater contaminated by volatile organic compounds. In-situ containment of solid and hazardous wastes and sediments is also being investigated. Large-scale applications of waste materials such as scrap tires, discarded plastics, and municipal sludge, are studied. Research approaches include theoretical modeling, laboratory feasibility studies and field pilot-scale investigations in order to address both fundamental and practical issues. Research programs of the faculty are outlined in their respective webpages.

FINANCIAL ASSISTANCE

Financial support is available for qualified students in the form of teaching assistantships, research assistantships, and fellowships.

Students working in teams on various projects





FACULTY

Christophe Darnault, Ph.D. Assistant professor: Hydrology and Water Resources Engineering, Watershed Management, Agriculture and Biotechnology

Amid Khodadoust, Ph.D. Assistant professor: Water treatment, physical/chemical processes for hazardous waste treatment and remediation

Krishna Reddy, Ph.D., P.E. Associate Professor: Geotechnical and geoenvironmental engineering

Karl Rockne, Ph.D., P.E. Assistant professor: Applied microbiology, wastewater treatment, pollutant fate in air, sediment, and water

Thomas Theis, Ph.D., P.E. Professor and Director, Institute for Environmental Science and Policy: Aquatic chemistry, environmental systems analysis, life cycle analysis

For further information, please contact:

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