Geotechnical, Materials & Pavements Engineering

The Engineering School of Sustainable Infrastructure and Environment

Civil Engineering

Education for Leadership Roles
- Innovative foundation systems and lifelines
- Safer embankments and retention systems
- More effective pavement systems
- Enhanced performance construction materials

Research Focus Areas
- Nano-modification and polymer modification of materials
- Advanced sensing technologies
- Advanced experimental methods
  - geotechnical centrifuge
  - electron microscopy
  - interferometry
  - computer tomography
  - dynamic methods
- Multi-scale computer modeling

Research Outcomes
- Faster and more accurate condition assessment
- Enhanced performance and durability
- More effective specifications for materials and construction
- Real-time assessment techniques
- Guidelines for recycling waste materials
- Safer containment systems for waste

Research Benefits
- Reduced risk in engineering decisions
- Less pollution through recycling
- Reduced traffic disruption and highway user costs
- Lower maintenance and rehabilitation costs
- Sustainable and more reliable constructed infrastructure

Facilities
- Geotechnical centrifuges
- Mobile field sensing equipment
  - 20-ton in situ truck
  - Geophysics and NOT
- Advanced materials characterization
  - Variable Pressure SEM
  - Laser interferometry
- Deep foundation test chamber
- Full-scale pipe testing facility
- Extensive geotechnical, concrete and asphalt laboratories
- 16 node Silicon Graphics Inc. parallel processor supercomputer

Research Opportunities
- Active funded research program with multiple sponsors
- Research assistantships and fellowships
  - competitive stipend and full tuition

Employment Opportunities
Graduates will be ready for leadership positions in academia, research institutions, government agencies and industry (geotechnical and materials consulting firms, material suppliers, large contractors)
Faculty

David Bloomquist, Ph.D., P.E.
Associate Professor
Geotechnical centrifuge modeling, in situ testing of soils, laboratory instrumentation, concrete technology

Byron E. Ruth, Ph.D., P.E.
Professor Emeritus
Transportation, materials, design, pavement behavior and construction, remote sensing, site selection, terrain analysis

John Davidson, Ph.D.
Professor Emeritus
Soil Mechanics, foundation, geotechnical engineering, in situ testing of soil

Dennis Hiltunen, Ph.D., P.E.
Associate Professor
Soil dynamics, earthquake engineering, geophysical characterization, instrumentation, experimental testing of soils

Michael McVay, Ph.D.
Professor
Soil-structure interaction, theoretical soil mechanics, numerical methods in geotechnical engineering, flow-through porous media

Reynaldo Roque, Ph.D., P.E.
Professor
Highway materials, pavement response, design and evaluation, non-destructive testing of pavements, geotechnical engineering

Frank Townsend, Ph.D., P.E.
Professor Emeritus
Laboratory testing, centrifugal modeling, soil mechanics and foundations

Mang Tia, Ph.D., P.E.
Professor
Concrete and asphalt materials, concrete and asphalt pavements, instrumentation

George A. Lopp
Associate-in Engineering
Instrumentation, servo-hydraulic testing of pavement structures, testing of roadway materials, pavement design and performance analysis of SUPERPAVE, 3-D x-ray tomographic imaging

Ana Mohseni, PhD
Geotechnical Engineer
Specializes in numerical modeling software including the Geo-Studio suite, FSConsol, Plaxis in fracture mechanics modeling using FRANC2D

Christopher Ferraro
Assistant in Engineering
Structures, Materials, Geotechnical

Courses

Geotechnical
Soil Mechanics
Geotechnical Engineering
Retaining Wall and Embankment Design
Foundation Engineering Design
Geotech Aspects of Landfill Design
Advanced Geotechnical Aspects of Landfill Design
In Situ Measurement of Soil Properties
Ground Modification Design
Advanced Soil Mechanics
Advanced Shallow Foundation Design
Advanced Deep Foundation Design
Experimental Determination of Soil Properties
Seepage and Drainage Problems in Geotechnical Engineering
Geotechnical Engineering Computer Aided Design
Earth Retaining Systems and Slope Stability
Soil Dynamics

Pavement Focus
Pavement Design
Pavement Analysis
Pavement Management
Bituminous Materials I
Bituminous Materials II
Superpave Hot Mix Asphalt Technology
Pavement Management

Concrete Materials Focus
Properties, Design and Construction of Concrete Materials
Condition Assessment of Structures

Mechanics and Modeling Focus
Continuum Mechanics with Applications for Civil Engineers
Numerical Methods in Geomechanics I
Numerical Methods in Geomechanics II

Contact Information
For information on graduate admissions requirements, research opportunities and funding information, please visit the web site for the Engineering School of Sustainable Infrastructure & Environment at www.essie.ufl.edu.

For specific inquiries, e-mail gradinfo@essie.ufl.edu

Specify Geotechnical, Materials and Pavements