Geosystems Engineering

**MASTER’S DEGREE REQS**

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<tr>
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<th>NON-THESIS OPTION</th>
<th>THESIS OPTION</th>
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<tbody>
<tr>
<td>SPECIALIZATION REQUIREMENT**</td>
<td>18 CREDITS</td>
<td>12 CREDITS</td>
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<tr>
<td>APPROVED ELECTIVES</td>
<td>12 CREDITS</td>
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<tr>
<td>THESIS</td>
<td>0 CREDITS</td>
<td>6 CREDITS</td>
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<td>TOTAL REQUIRED CREDITS</td>
<td>30 CREDITS</td>
<td>30 CREDITS</td>
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*Degree requirements for the MSCE and MSENVE degrees. Requirements for the MSBOE, MSCSE, and MSESM degrees differ – please contact gradinfo@ce.gatech.edu for more information. **Specializations include: Construction and Infrastructure Systems Engineering; Environmental Engineering; Geosystems Engineering; Structural Engineering; Mechanics and Materials; Transportation Systems Engineering; Water Resources Engineering.

**RESEARCH AREAS**

- Bio-mediated and bio-inspired geotechnics
- Energy geotechnology
- Geotechnical analysis and design
- Natural hazards engineering
- Engineered geomaterials
- Sustainable subsurface engineering
- Rock mechanics and engineering
- Micro-geomechanics
- Subsurface characterization

**FACILITIES**

The Geosystems Engineering instruction and research laboratories occupy more than 900 square meters of custom space within the Mason Building, including:

- Soil Mechanics Instruction Laboratory
- Damage Poromechanics Laboratory
- Geoenvironmental Engineering Laboratory
- Sustainable Geotechnical Systems Laboratory
- In-Situ Geotechnical Laboratory
- Rock and Fracture Mechanics Laboratory
- Subsurface Processes Laboratory
- NSF Engineering Research Center for Bio-mediated and Bio-inspired Geotechnics (CBBG)

**PH.D. DEGREE REQS**

The Ph.D. program includes research and approximately 50 credits beyond the Bachelor's degree. Doctoral students, in concert with their advisor and thesis committee, construct an individualized program of study tailored to the student's research interests. Major elements of the program include:

- Comprehensive exam
- Minor
- Research proposal
- Thesis
- Oral defense

**GEOTECHNICAL SOCIETY**

The Georgia Tech Geotechnical Society serves both graduate and undergraduate students who share a common interest in geosystems engineering. The Society organizes seminars and coordinates student participation in conferences, professional meetings, intramural athletics and social events. The Society administers the Geotechnical Society Fund, a pool of resources provided by alumni, corporate donors and friends. The Society also assists the ASCE Geo-Institute Georgia Chapter with hosting the George F. Sowers Annual Symposium each spring in memory of Professor Sowers’ many academic and professional achievements.

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CE.GATECH.EDU/GRADUATE
GRADINFO@CE.GATECH.EDU

Georgia Tech School of Civil and Environmental Engineering
College of Engineering
### FACULTY

**CHLOÉ F. ARSON, PH.D.** Associate Professor  
Damage and healing mechanics for rocks and concrete, coupled processes in porous media, simulation of fracture propagation in anisotropic materials, bio-inspired burrowing mechanics, bio-inspired infrastructure network design.

**RUDOLPH BONAPARTE, PH.D., P.E., F.ASCE, N.A.E.** Professor of the Practice & Chairman and Senior Principal, Geosyntec Consultants  
Geoenvironmental engineering; shear strength and slope stability; dams and levees; waste disposal facility design; natural hazard mitigation; engineering leadership

**SUSAN E. BURNS, PH.D., P.E., F.ASCE** Associate Chair for Administration and Finance & Professor  
Geoenvironmental engineering; engineered materials; physical and chemical behavior of soils; physical remediation of contaminated soil and groundwater; and beneficial use of waste materials.

**G. WAYNE CLOUGH, PH.D., P.E., DIST.M.ASCE., N.A.E.**  
President Emeritus, Georgia Institute of Technology & Secretary Emeritus, Smithsonian Institution  
Tunneling, excavation, large construction; finite elements; strength anisotropy; earthquake engineering; climate change; nature and man-made hazards; engineering leadership

**SHENG DAI, PH.D.** Assistant Professor  
Energy geotechnics (gas hydrate, geothermal system and carbon storage); coupled subsurface processes; geomaterials characterization; multiphase flow in porous and fractured media.

**J. DAVID FROST, PH.D., P.E., P.ENG, F.ASCE**  
Elizabeth and Bill Higginbotham Professor & Group Coordinator  
Geomaterial characterization; 2-D and 3-D micro-structure quantification; interface mechanisms; spatial earthquake hazard analysis; image processing and analysis; bio-geotechnics performance of earth retaining structures.

**HAIYING HUANG, PH.D.** Associate Professor  
Rock mechanics; fracture mechanics; coupled processes; flow in porous media; fluid injection into granular media; hydraulic fracturing; rock cutting and indentation.

**JORGE MACEDO, PH.D.** Assistant Professor  
Geotechnical earthquake engineering; performance-based engineering; risk and reliability; numerical modeling; and mining geotechnics.

**PAUL W. MAYNE, PH.D., P.E.** Professor  
In situ testing; site characterization; foundation systems; soil properties determination; geostatic stress state; ground improvement; and cone penetrometers.

### ADJUNCT FACULTY

**ROBERT C. BACHUS, PH.D., P.E.**  
**GLENN J. RIX, PH.D., P.E.**