AGENDA

5:00  Students arrive
5:10  Overview of CEE Graduate Programs - Dr. Don Webster
5:40  Poster Session
      Pizza & Soft Drinks
      Affinity Group Representatives
      Graduate Student Research Posters
7:00  Adjourn
WHY GO TO GRADUATE SCHOOL?

• Increase your knowledge in your areas of interest
• Increase your ability to take on more challenging work
• Improve earning potential

What American’s earn in a lifetime

(2011 dollars)

Source: Time Magazine (Oct 2012)
The need for Civil and Environmental Engineers will continue to increase in future decades due to:

- Globalization
- Population Dynamics
- Environmental Concerns
- Technological Revolution
- Urban Development

(NOTE: Projected Employment)
CHOOSING A GRADUATE PROGRAM

Important Factors:

- **Quality of Program**
  Faculty; curriculum; facilities; national & international reputation

- **Faculty in Your Area of Interest**
  Schools with high rankings may not have faculty in your specific area of interest

- **Cost**
  Tuition and other school-related expenses
  Living expenses in the area, especially housing

- **Location**
CEE BY THE NUMBERS

782 Undergraduate Students

376 Graduate Students

54 Tenure-track Faculty

$16 million in new research funding FY 2012

No. 3 Civil Engineering Grad Program

No. 6 Environmental Engineering Grad Program

3 Core Values: Rigor, Diversity, Entrepreneurial spirit
376 total students:
202 Ph.D., 167 MS, 7 Special Graduate

31 countries and 28 states represented
UNDERGRADUATE DEGREES OF CEE GRAD STUDENTS

- Architectural Engineering
- Architecture
- Biology
- Biosystems Engineering
- Chemical Engineering
- Chemistry
- Civil Engineering
- Earth Science
- Engineering Cybernetics
- Environmental Engineering
- Math
- Mechanical Engineering
- Mechanical System Design
- Mining Engineering
- Naval Architecture & Ocean Engineering
GRADUATE DEGREE OPTIONS IN CEE

M.S. Civil Engineering \((\text{requires previously earned B.S. Civil Engineering})\)
M.S. Engineering Science & Mech \((\text{requires B.S. in engineering or physical science})\)
M.S. Environmental Engineering \((\text{requires B.S. in engineering})\)
M.S.
Ph.D.

Multidisciplinary Programs

- BioEngineering
- Computational Sciences & Engineering
- Transportation Planning/Systems Engineering
  \((\text{Dual degree with City Planning})\)
M.S. DEGREE

• **Course Option** (credit hours)
  18 Courses in Major Area of Specialization
  12 Approved Electives
  30 Total

• **Thesis Option** (credit hours)
  12 Courses in Major Area of Specialization
  12 Approved Electives
  6 Thesis
  30 Total
Ph.D. DEGREE

1. **Program of Study**: approximately 50 semester hours (16-17 courses) beyond bachelor’s degree
2. **Minor Field of Study**: 9 credit-hours (3 courses)
3. Ph.D. Qualifying Exam
4. Thesis Proposal
5. Original Research Project
6. Thesis and Defense
CEE RESEARCH ACTIVITIES

- Construction Engineering
- **Environmental Engineering**
- Environmental Fluid Mechanics and Water Resources
- **Geosystems Engineering**
- Structural Engineering, Mechanics and Materials
- **Transportation Systems Engineering**

**Programs**

- Construction
- Environmental
- Geosystems
- Structures
- Transportation
- Water

Special Ph.D M.S.
WIDE RANGE OF RESEARCH OPPORTUNITIES

**Health Technology/Systems**
- Bio-medical engineering flows
- Remediation of hazardous waste
- Environmental impact
- GeoEnvironmental

**Water**
- Water quality
- Sediment erosion
- Water decision support systems
- Groundwater remediation

**Energy**
- Transportation modeling
- Sustainable systems
- Advanced materials
- Air quality

**Advanced Transportation Systems**
- Road congestion pricing
- Emissions monitoring and reduction
- Traffic decision support systems

**Structural Systems**
- Bridge & building design
- Earthquake engineering
- High-performance materials
- Sensor monitoring

**Earth Systems**
- Soil & rock mechanics
- Porous media
- Soil liquefaction
- Resource recovery
RESEARCHING THE FUTURE – GRAND CHALLENGES

**Energy:** Exploring issues relevant to supplying energy to meet the needs of growing populations in this and future generations

**Health:** Human well-being and progress toward sustainable development are vitally dependent upon improving the management of human living environments

**Water:** Lack of clean water is responsible for more deaths in the world than war. About 1 out of every 6 people living today do not have adequate access to water

**Megacities:** Rapid urbanization has contributed to the world’s air pollution and water restraints, as well as transportation challenges

**Natural Hazards:** Every year, natural hazard events threaten lives and livelihoods, resulting in deaths and billions of dollars in damage

**Urban Infrastructure:** Funding has been insufficient to repair and replace it. Engineers of the 21st century face the formidable challenge of modernizing the fundamental structures that support civilization

CEE @ GT
**Major Courses:** Environmental Fluid Mechanics

- CEE6251 Intermediate Fluid Mechanics
- CEE6281 Open Channel Flow
- CEE7751 Computational Fluid Dynamics
- CEE6261 Environmental Fluid Mechanics
- CEE 6810 Linear Wave Mechanics
- CEE6231 Probability and Statistics
- CEE6282 Sediment Transport
- CEE6293 Hydrodynamic Stability and Turbulence
- CEE6821 Nearshore Hydrodynamics
- CEE6262 Advanced Environmental Fluid Mechanics
- ME 6622 Experimental Methods

**Minor Courses:** Biological Oceanography

- BIOL6803 Biological Oceanography
- EAS6140 Thermodynamics of Oceans and Atmospheres
- AUBURN Red Sea Biology
- UCSC Coastal Phys. Oceanography/Marine Ecosystem

**Proposed Thesis Title:**
Fluid Mechanical and Chemical Cues in Thin Layers: Effects of Scale and Individual Behavior

**Thesis Committee Composition**
- Chair: CEE (Environmental Fluid Mechanics)
- Co-Chair: BIOL (Biological Oceanography)
- CEE (Environmental Fluid Mechanics)
- CEE (Coastal Engineering)
- BIOL (Ecology)
**Major Courses:** Structural Engineering
CEE4550 Structural Analysis II
CEE6521 Reinfor Concrete Members
CEE6551 Strength of Materials
CEE6523 Prestressed Concrete
CEE6527 Structural Steel Design
CEE6544 Structural Modeling
CEE6510 Structural Dynamics
CEE8813 Durability Cement-Based Mater
CIEE8813 Materials Science of Concrete
ISYE6739 Statistical Methods

**Minor Courses:** Materials Science
MSE8803 Environmental Effects
MSE6795 Math, Stat & Comp Tech-Mate
MSE6796 Struct-Property Relation
CHEM8843 Chem & Phys - Surfaces & Interfaces
CHBE6130 Electrochemical Engr
ME7772 Fund-Fracture Mechanics
MSE6120 Quant Charact-Microstruc

**Thesis Title:**
High-Strength Stainless Steels for Corrosion Mitigation in Prestressed Concrete: Development and Evaluation

**Thesis Committee Composition**
Chair: CEE (Materials)
Co-Chair: CEE (Structural Engineering)
Co-Chair: MSE (Corrosion)
CEE (Structural Engineering)
Gov’t Agency (Materials)
Bunger Henry, 214
404-894-2246  gradinfo@ce.gatech.edu

Robert Simon
Graduate Programs Manager

Ken Irwin
Admissions Coordinator

Carol Eason
(Part-time)

Applying for graduation, enrollment waivers, questions on policy and procedures

I-20’s, PhD progress documentation, general questions

PhD audits, admissions process, general questions
PRINCIPAL CEE BUILDINGS

Mason Building*

Daniel Lab

Sustainable Education

*under renovation through 2013

Check [http://www.ce.gatech.edu/](http://www.ce.gatech.edu/) for Swing Space directory

Structures Lab

Environmental Science & Technology
Currently, 213 students are supported on Graduate Research (201) and Teaching Assistantships (12).

At least 36 students are supported on NSF and other fellowships or grants.

Graduate assistantships typically begin at $1,750 per month and include tuition waivers. You pay only approximately $1,000 in required fees per semester.

Additional fellowships are available primarily for Ph.D. students.
Fellowship Office (http://fellowships.gatech.edu/)
Help with Nationally-Competitive Awards
Fellowships for International Students

Common Fellowships for CEE Students
NSF (https://www.fastlane.nsf.gov/grfp/)
NSDEG (http://ndseg.asee.org/)
SMART (http://smart.asee.org/)
DOE (http://scgf.orau.gov/)
EPA STAR (http://www.epa.gov/ncer/fellow/)
Eisenhower (http://www fhwa dot gov/tpppd/detfp.htm)
SWE (http://societyofwomenengineers.swe.org/)
Addresses:
Written, Graphical, and Oral Communication Skills

Consists of:
• **Formal course**: CEE 6754 (not remedial!)
• **Workshops** (e.g., NSF fellowship essays)
• **Individual help** on publications, presentations, applications, etc.

Dr. Lisa Rosenstein
325 SEB
Graduate Co-operative Experience

http://www.gradcoop.gatech.edu/student_info.php

Internships
Mary Fisher (mary.fisher@dopp.gatech.edu)

Work Abroad Program

http://www.profpractice.gatech.edu/
STUDY ABROAD: MUNDY FUND

Funding designated for CEE students to participate in an international learning experience during their enrollment. Priority is given to undergraduate students.

Examples of funded projects:

- Brandon Strellis traveled to Norway to study hydropower, including simulations in the River Nidelva.

- Lynne Schleiffarth traveled to Shanghai and Beijing, China to study how port systems respond to earthquakes.

Deadlines and information: http://www.ce.gatech.edu/academics/overview
STUDENT ORGANIZATIONS

American Society of Civil Engineers
Association of Environmental Engineers and Scientists
Chi Epsilon
Engineering Students Without Borders
Earthquake Engineering Research Institute
Institute of Transportation Engineers

http://www.ce.gatech.edu/academics/student-organizations
EMPLOYERS OF MS GRADUATES
WHERE DO OUR Ph.D. GRADUATES WORK?

Faculty Positions in U.S.
- e.g., Clemson Univ., Colorado St., Emory Univ., Oregon St., Penn St., Rice Univ., Texas A&M,
  UC Davis, Univ. of Illinois, Univ. of Kansas, Univ. of Tennessee

University Research Positions
- e.g., Arizona State, Caltech, Cornell University, Stanford Univ., Tufts Univ., Virginia Tech

International Faculty & Research Positions
- e.g., Catholic University, Chile; ITESM, Mexico; Korea National University; National
  University of Singapore; Pavia University, Italy; Tsinghua University, China; University of
  Melbourne, Australia

Gov’t Agencies and National Laboratories
- e.g., California Department of Transportation, U.S. EPA, Georgia Dept. of Natural Resources,
  Georgia Dept. of Transportation, Korean Transportation Institute, Los Alamos National
  Laboratory, Oak Ridge National Laboratory, U.S. Army Corps of Engineers, World Bank

Consulting and Industry
- e.g., Bechtel, CH2M-Hill, Intel Corp., ARCADIS, Pratt & Whitney, Siemens ITS, Schlumberger,
  Uzun and Case
WHAT DO YOU NEED TO DO NOW?

Seniors:

- Start getting application materials ready
  - GRE, faculty references, personal statement
- Investigate working on a research project with a faculty member

Juniors:

- Begin investigating graduate schools
- Plan your remaining courses including working on a research project with a faculty member
- Plan to apply for Fellowships (NSF and other) next fall. Applications are typically due during Fall semester.

All:

- Students with a 2.7 or higher GPA may take graduate courses with the instructor’s permission