Civil, Environmental and Construction Engineering

@ The University of Central Florida

Majors that Build Civilizations and Improve Quality of Life
Welcome from our Department Head

Lakshmi N. Reddi, Ph.D., P.E.
Department Head
CECE Department

- 22 Faculty Members in Civil, Environmental, and Construction Engineering
- Approximately 700 Undergraduate and 300 Graduate Students
- A Leading Research Unit at UCF
- Website http://www.cece.ucf.edu/
Undergraduate Degrees

- BS Civil Engineering
- BS Environmental Engineering
- BS Construction Engineering (New Degree)
- Dual Degrees
Graduate Degrees

- MS and PhD Civil Engineering
- MS and PhD Environmental Engineering
Curriculum Summary

- 128 Hours (about 50% at the major level)
- Calculus I, II, III and Differential Equations
- Chemistry I and II
- Physics I and II
- Economics
- General Education
Civil, Environmental, and Construction Engineering

- Branches of Engineering Using Knowledge of Math and Science to put ideas into Physical Reality
- Oldest Engineering Profession
- Yet it uses latest high technology applications such as Computers, Robotics, and Lasers.
Civil, Environmental, and Construction Engineering

- Profession with Significant Responsibility and Accountability
- Mistakes may have Major Implications (Life & death)
Civil, Environmental, and Construction Engineers
Improving the Quality of Life

- Safe Structures (Buildings and Homes)
- Safe Transportation (Roads, Airports, Railways, Waterways)
- Safe Air and Water
- Safe Working Environments
Civil Engineering

Showcase
Extreme Structures
Sub-Disciplines of Civil Engineering

- Structural Engineering
- Geotechnical Engineering
- Transportation Engineering
- Water Resources Engineering
Structural Engineers

- Design, Plan and Construct Buildings, Power Plants, Bridges, Dams and Other Structures
- Employed by Private Consultants and Federal and State Agencies
Examples of Structural Engineering
Structural Testing Facility
Smart Buildings

Earthquake
Computer Analysis and Monitoring of Structures

Strain concentration in weld region
Launch Facilities and Space Exploration
Geotechnical Engineers

- Analyze Soils and Rocks that support Structures and Pavements
- Design Foundations for Bridges and Buildings, Evaluate Potential Settlement, Slope Stability, Seepage, Earthquakes
- Analyze and Remediate Sinkholes
“I skimped a little on the foundation, but no one will ever know it!”
Leaning Tower of Pisa

The Engineering Solution

- Steel cables anchor the tower
- Lead weights placed on north side
- 41 corkscrew drills remove soil
- The tower sinks into the cavity
Drilling Foundations
Tunnels
Kansai Airport - largest manmade island
Manmade islands
Sinkholes
Transportation Engineers

- Safe and Efficient Movement of People and Goods
- Planning, Design and Operation of Transportation Systems including Highways, Railroads, Airports and Mass Transit
Transportation Engineering
Intelligent Transportation Systems

Global Positioning Systems
Freeway Management
Traffic Signal Control
Water Resources Engineers

- Analyze and Predict Water Demand and Supply
- Water Drainage, Run-off and Irrigation Needs
- Storm Surge Prediction, Flood Prevention and Beach Erosion
Dams

Snake River
Washington

Three Gorges Dam
Yichang China
Hurricane Modeling
Green Technologies
Environmental Engineering Showcase
ENVIRONMENTAL ENGINEERING

- Air Pollution
- Solid and Hazardous Waste Management
- Water and Wastewater
- Environmental Remediation
- Ecosystem Service Design
Air Pollution Engineers

- Design air pollution control technologies
- Develop and enforce air pollution regulations
- Evaluate pollutant loadings
- Employed by consulting firms, regulatory agencies, research labs, municipal governments
Air Pollution Sources
Air Pollution Effects
Cleaning Air
Solid and Hazardous Waste Engineers

- Design management facilities for waste management
- Develop and enforce regulations
- Operate facilities
- Employed by consulting firms, regulatory agencies, municipal governments
Landfill Design and Operations
Recycling
Water and Wastewater Engineers

- Design water and wastewater treatment facilities
- Develop and enforce regulations for protecting water resources
Water Pollution
Water Reclamation and Reuse
Environmental Remediation Engineers

- Design remediation technology for contaminated sites
- Develop and enforce regulations
- Test remediation technologies
New Areas of Environmental Engineering

- Green Infrastructure Design
- Sustainable Design
- Ecological Risk Assessment
- Design for Energy
Construction Engineering Showcase
Construction Engineers

- Provide Technical and Management Skills to Plan and Construct Project
- Planning for Successful and Timely Completion of Projects within the Budget Constraints
Construction Engineering

- Estimating
- Scheduling
- Construction Equipment
- Construction Methods
- Human Resource Management
- Financial Management
Bridges
Highways
Specialized Construction

Laser Wave

Observatory
Homes
Student Activities

Showcase
ASCE Student Activities

- Spring 2008 Southeast Regional Conference at UCF
- Concrete Canoe Design/Build/Race
- Steel Bridge Design/Build
- High Strength Concrete Cylinders
- Balsa-Wood Bridge
- Geotechnical Competition
Concrete Canoe
Steel Bridge
Employment Prospects

- Money magazine - ranked Civil Engineering as 5th “Best Jobs in America” based on salary, prestige, growth and security
- Money magazine - ranked Civil Engineering as 10th highest paid profession
Employment Prospects

- The U.S. Bureau of Labor and Statistics predicts Environmental Engineering will have a much faster than average growth over the next 10 years (May 2008).
- Current supply of Environmental Engineers does not meet demand.
Employment Prospects

- 99% of graduates desiring a job in Civil, Environmental, or Construction Engineering are able to attain one, many locally.
- Starting salaries - vary from region to region
- Central Florida area - $45,000 to $50,000
- Professional Engineering Registration makes a Big Difference
- Stability and Job Security
Internships/Co-ops

- UCF well-positioned for students to do internships with local companies
- UCF Career Service Office
- UG Research Opportunities
- Local Engineers teach some Design and Practice Courses as Adjunct Professors
- Corporate Affiliate Board
Scholarships

- College of Engineering and Computer Science has many scholarships
- CECE Department has roughly 45% of the total College scholarships
- Mainly for students who have been here for a term or more

http://www.cecs.ucf.edu/students/scholarships.htm
The End

Enjoy your Open House Experience!!