OVERVIEW STATEMENT

General: Civil engineers have the responsibility to provide the basic, environmentally sound infrastructure for humanity. Through skills attained in mathematics, mechanics (study of forces), materials, project management, leadership and ethics, civil engineers design and build your dreams.

Career in Civil Engineering: You may choose to work for a state or local government or perhaps in the private sector at a consulting or construction firm. Some civil engineers go into supervisory or administrative positions, while others pursue careers in design, construction or teaching.

Salaries: According to the Labor Department, civil engineers made a median salary of $77,560 in 2010.


Curriculum (both breadth and depth): The curriculum is designed to provide students a broad background in all six major areas of civil engineering, but it also has the flexibility of allowing them to take more courses in their area of interest by selecting appropriate restrictive electives.

Advising: Students are guided by a freshman adviser in their first two semesters. They are then assigned a faculty adviser who guides them through graduation.

Laboratories: The curriculum has five laboratories: Computer Aided Design (CAD), Surveying, Materials, Soils and Hydraulics laboratory in addition to laboratories in Physics and Chemistry.

Project-Oriented Courses: Starting in the junior year, students are required to complete at least one real-world project in nearly all civil engineering courses.

Capstone Design Sequence: The curriculum culminates in providing the students a real-world design experience through a two-course sequence. Groups of four or five students have to design a project that includes developing a site plan, designing a reinforced concrete, steel or timber structure with adequate foundations, designing internal roads, parking and pavements, designing a stormwater management system, designing a water distribution system with lift stations and/or groundwater wells, designing a waste water collection system, and developing a project management plan (including a project schedule, budget, construction cost estimate and a work breakdown structure). The students are required to design systems that not only minimize adverse social impacts on society, but also include features that enhance the quality of life of the society and also address sustainability issues.

Communication Skills: Having good communication skills is the number one priority of prospective employers. Students’ communication skills are honed starting from Introduction to Civil Engineering, where they are required to make oral team presentations and write individual technical reports, to the Capstone Design Sequence in which students make numerous oral presentations and write a substantial, real-world, technical report with detailed design procedures, calculations and drawings.

CAD Skills: Many employers require students to have good CAD skills. Students take a 16-week CAD laboratory in their very first semester, and hone their CAD skills throughout the curriculum.
Site Visits: Students are taken to numerous site visits.

ASCE Student Chapter: The department has a very active American Society of Civil Engineering (ASCE) student chapter that annually takes part in regional Concrete Canoe and Steel Bridge competitions. Nearly 25% of the civil engineering students go to these competitions. These competitions are a great way for students to improve their team-building, leadership, networking and communication skills.

Path to Becoming a Professional Engineer: It is very important that all civil engineering students take the necessary steps to become a professional engineer. The first step is to pass the Fundamentals of Engineering (FE) exam. Courses emphasize FE content and the department offers free review courses to enable students to pass the FE exam prior to graduation.

Listing of Academic Programs: Civil engineering has the following areas of specialization:

- Construction Management
- Environmental Engineering
- Geotechnical Engineering
- Structural Engineering
- Transportation and Highway Design
- Water Resources Engineering

RESEARCH

Geotechnical: Research is concentrated in the areas of stabilization of waste materials for beneficial uses, in situ testing of soils, fiber-optic sensors in soils and evaluation of pavements.

Structures: Current research projects are in the area of structural dynamics, wind engineering and the development of new building materials.

Water Resources/Environmental: State-of-the-art models are used to determine groundwater seepage, salt transport and contaminant transport into the Indian River Lagoon, and the development of stormwater management models.

A sample of recent research projects are:

- Stabilization of waste materials for beneficial uses
- Developing fiber-optic sensors to measure pore water pressures
- Application of soil pressure meter to determine elastic soil moduli
- Developing specifications for using Recycled Pavement as Base, Subbase or General Highway Fill
- Development of wind vulnerability models for residential buildings
- Study of cost effectiveness of hurricane mitigation measures
- Testing of scaled models for buildings under earthquake loading and development of new methods to control seismic vibrations
- Estimation of nutrient loads in the Indian River Lagoon using numerical models
- Measurement and modeling of salt transport below an estuary
- Development of the WEANES model to estimate the annual removal efficiency of a wet detention pond
- Estimation of Curve Numbers on impervious surfaces
- Composition, energy content, disposal rates, recycling rates, anaerobic degradation and composting of solid waste