**Civil Engineering program**

**Master of Science in Civil Engineering (M.S.C.E.) Degree**

**DEGREE INFORMATION**

**Program Admission Deadlines:**

**Fall:** February 15

**Spring:**  October 15

**Summer:**  February 15

**Minimum Total Hours:** 30

**Program Level:** Master’s

**CIP Code:** 14.0801

**Dept. Code:** EGX

**Program (Major/College):** ECE EN

**Approved:** 1981

**Concentrations:**

Engineering for International Development (EFD)

Materials Engineering and Science (MTL)

Structures Engineering (STR)

Transportation Engineering (TPT)

Water Resources (WRS)

**CONTACT INFORMATION**

**College:** Engineering

**Department:** Civil and Environmental Engineering

**Contact Information:** [www.grad.usf.edu](http://www.grad.usf.edu/)

**PROGRAM INFORMATION**

The field of Civil Engineering has long been known for its breadth and ability to adapt to the new technological needs of society. The traditional areas of public works, such as highways, bridges, water supply, building design, and wastewater treatment, remain very important. In addition, the modern area of managing the environment has been included in the Civil Engineering domain. Graduates of the programs are prepared for careers with public agencies or private industry and with firms involved in planning, design, research and development, or regulation.

The Department has a high bay structures laboratory, which includes an MTS 250 kip testing machine. There are also well-equipped environmental, soils, pavement and hydraulics laboratories. These laboratories include equipment such as an ion chromatograph, atomic absorption spectrometer, environmental chamber, constant rate of stress consolidometer, triaxial units, and Superpave testing equipment.

The M.S.C.E. is a research-oriented degree in which the student writes, as a major part of the degree requirements, a thesis that defines, examines, and reports in depth on a subject area relevant to Civil Engineering. The purpose of the thesis is to instill in the student the ability to inspect, evaluate, and report on a subject of interest to the engineering profession.

**Accreditation:** Accredited by the Commission on Colleges of the Southern Association of College and Schools.

**ADMISSION INFORMATION**

Must meet University requirements (see Graduate Admissions) as well as requirements listed below.

**Program Admission Requirements**

* Undergraduate GPA ≥ 3.0 preferred.
* GRE with preferred minimum scores of V 145 (25th percentile), Q 155 (60th percentile), AW 3.0 (15th percentile); or valid Fundamentals of Engineering (FE) certificate. Verification of FE certification should be obtained from the professional engineering (PE) board where the FE certification was obtained. See the CEE department website for more information: <http://www2.eng.usf.edu/cee/graduate/apply.htm>.
* TOEFL (international applicants only) 79 (550 paper-based exam); or IELTS 6.5.
* Two Letters of Reference provided at the time of application (three required for EFD concentration).
* Statement of Purpose provided at the time of application.
* Resume provided at the time of application.
  + Exceptions made on a case-by-case basis where warranted.

**DEGREE PROGRAM REQUIREMENTS**

**Pre-requisites – 12 hours**

All students must complete the following pre-requisites or equivalent courses:

EGN 3311 3 Statics

EGN 3343 3 Thermodynamics I

EGN 3353 3 Basic Fluid Mechanics

EGN 3615 3 Engineering Economics

Most entering students will have taken these courses (or equivalent versions) prior to admission to the M.C.E. program. Students who have not taken these courses prior to beginning the M.C.E. degree program are encouraged to do so as quickly as possible, as these may be pre-requisites for a number of graduate-level courses in the program.

**Total Minimum Hours 30 hours**

Coursework – 24 hours

Thesis – 6 hours

The program consists of a minimum of 24 credit hours of coursework and 6 credit hours of thesis. For students pursuing a Concentration area (as detailed below), the 24 credit hours of coursework will include at least 12 credit hours of Concentration Requirements, with remaining credit hours to consist of technical electives as approved by the Department. For students pursuing no Concentration area, the 24 credit hours of coursework will consist wholly of technical electives as approved by the Department, but with a minimum of 15 credit hours taken within the Department of Civil and Environmental Engineering. Students without an Engineering undergraduate degree will be required to complete undergraduate engineering pre-requisite courses as determined by the Department. Contact the Graduate Program Director for more information.

**Concentration Requirements -12 hours minimum**

The Department supports M.S.C.E. concentration areas in Engineering for International Development (EFD), Geotechnical Engineering (GTL), Materials Engineering and Science (MTL), Structures Engineering (STR), Transportation Engineering (TPT), and Water Resources (WRS). Students may select from one of these Concentrations, or may select no concentration.

**Engineering for International Development (EFD)**

This concentration acknowledges coursework and international field experience in the area of engineering for international development that considers issues of sustainability, environment, health, gender, and society. Students must take the following four courses, and must engage in an extended international engineering field experience, which in most cases will form the basis of the Master’s thesis.

ENV 6510 Sustainable Development Engineering

A minimum of 1 course (3 credits) from the following anthropology courses:

ANG 6766 3 Research Methods in Applied Anthropology

ANG 6730 3 Socio-cultural Aspects of HIV/AIDS

ANG 6469 3 Health, Illness and Culture

A minimum of 1 course (3 credits) from the following global public health courses:

PHC 6764 3Global Health Principles & Contemporary Issues

PHC 6761 3Global Health Assessment Strategies

3 additional credit hours of coursework in international development engineering or closely related areas.

Students engaged in full-time global training and service as part of the EFD concentration (e.g., in the U.S. Peace Corps or equivalent) may register for CST 6990 for 0 credit hours while in their country of service.

**Geotechnical Engineering (GTL)**

CEG 5115 Foundation Engineering

CES 6118 Applied Finite Elements

6 additional credit hours of coursework in Geotechnical engineering or closely related areas.

**Materials Engineering and Science (MTL)**

At least 2 courses (6 credit hours) from the following list:

CGN 6933 Advanced Construction Materials

CGN 6720 Electrochemical Diagnostic Techniques

CGN 6933 Structural Life Prediction

EMA 5326 Corrosion Control

EMA 6510 Characterization of Materials

6 additional credit hours of coursework in Materials Engineering and Science or closely related areas.

**Structures Engineering (STR)**

At least 1 course (3 credit hours) from the following list of design courses:

CES 6706 Advanced Concrete

CES 6835 Design of Masonry Structures

CES 5715C Pre-Stressed Concrete

At least 1 course (3 credit hours) from the following list of analysis courses:

CES 6118 Applied Finite element

CGN 6933 Advanced Structural Analysis

CGN 6933 Advanced Structural Mechanics

CES 5209 Structural Dynamics

6 additional credit hours of coursework in Structures Engineering or closely related areas.

**Transportation Engineering (TPT)**

TTE 5205 Traffic Systems Engineering

TTE 5501 Transportation Planning and Economics

TTE 6507 Travel Demand Modeling

3 additional credit hours of coursework in Transportation Engineering or closely related areas.

**Water Resources (WRS)**

4 courses (12 credit hours) from the following list:

CWR 6235 Free Surface Flow

CWR 6239 Waves and Beach Protection

CWR 6305 Urban Hydrology

CWR 6534 Coastal and Estuary Modeling

CWR 6535 Hydrologic Models

CGN 6933 Vadose Zone Hydrology

CGN 6933 Groundwater Hydraulics

CGN 6933 Advanced Computational Fluid Mechanics

GLY 6836 Numerical Modeling of Hydrogeologic Systems

GLY 6827C Advanced Hydrogeology

CWR 6820 Coastal Waves and Structures

CWR 6538 Advanced Hydrologic Model

**Comprehensive Exam**

The thesis and defense are used in lieu of a comprehensive exam.

**Thesis - 6 hours minimum**

Students pursuing the M.S.C.E. are required to complete at least six (6) credits of Thesis. Students must conduct a suitable research project under the guidance of their thesis advisor, write an original thesis based upon the results of the research project, and defend the thesis to a committee that must subsequently approve the completed thesis. For students in the EFD Concentration, the thesis must be associated with research in a developing-world context.

**Other Requirements**

* A maximum of 9 credits taken outside the CEE department may be applied to meet the degree requirements.
* A maximum of 6 credits of independent study may be applied to meet the degree requirements.

**COURSES**

See [http://ugs.usf.edu/course-inventory](http://www.ugs.usf.edu/sab/sabs.cfm)