CIVIL ENGINEERING PROGRAM

Master of Civil Engineering (M.C.E.) Degree

DEGREE INFORMATION

Program Admission Deadlines:

Fall:	February 15
Spring:	October 15
Summer:	February 15

Minimum Total Hours: 30
Program Level: Masters
CIP Code:
14.0801
Dept. Code: EGX
Program (Major/College): ECE EN

Concentrations:
Geotechnical Engineering (GTL)
Materials Engineering and Science (MTL)
Structural Engineering (STR)
Transportation Engineering (TPT)
Water Resources (WRS)

CONTACT INFORMATION

College: Engineering
Department: Civil and Environmental Engineering

Contact Information: www.grad.usf.edu
Other Resources: www.usf4you.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 firms involved in planning, design, research and development, or regulation.

~~College computer facilities are available to all departmental students. In addition, the department has a variety of microcomputers available for student use.~~ The department ~~also~~ 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 unit, environmental chamber, constant rate of stress consolidometer, triaxial units and superpave testing equipment.

The M.C.E. degree provides a student with the opportunity to earn the advanced degree by coursework only. These degrees are recommended for part-time students who find it difficult to do thesis research because of their work commitment or those who wish to complete degree requirements quickly. Many of the department's graduate courses are offered online or on weekday evenings, which permits working students the opportunity to seek a graduate degree.

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

- Overall GPA 2.75; GPA in major 3.00
- GRE with preferred minimum scores of V 20%, Q 50%, AW 10% or valid fundamentals of engineering (FE) certificate preferred. 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 6.5 (IELTS).
- Two (2) Letters of Reference
- Statement of Purpose
- Exceptions made on a case-by-case basis where warranted.

DEGREE PROGRAM REQUIREMENTS

Total Minimum Hours **30 hours**

The minimum coursework requirement is 30 credit hours for students with an undergraduate Engineering degree. Students without an engineering BS will be required to complete undergraduate engineering pre-requisite courses as determined by the Department. Please consult the graduate program coordinator for the list of required courses.

Core Requirements

All students must complete the following pre-requisites:

EGN 3311 Statics
EGN 3343 Thermodynamics I
EGN 3353 Fluid Mechanics
EGN 3615 Engineering Economy[HC1]

Concentration Requirements

15 hours

Students may select from the following Concentrations:

Geotechnical Engineering (GTL)

CEG 5115 Foundation Engineering
CES 6118 Applied Finite Elements
9 additional credits of coursework in Geotechnical engineering or related areas.

Materials Engineering and Science (MTL)

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

CGN 6933 Aadvanced Construction Materials
CGN 6720 Electrochemical Diagnostic Techniques
CGN 6933 Structural Life Prediction
EMA 5326 Corrosion Control
EMA 6510 Characterization of Materials ~~(3)~~

9 additional credits of coursework in Materials Engineering and Science or related areas

Structures Engineering (STR)

1 course (3 credits) from the following list of design courses:

CES 6706 Advanced Concrete
CES 6835 Design of Masonry Structures
CES 5715C Pre-stressed Concrete

1 course (3 credits) from the following list of analysis courses:

CES 6118 Applied Finite element

CGN 6933 Advanced Structural Analysis
~~EML 6653 Applied Elasticity~~CGN 6933 Advanced Structural Mechanics
CES 5209 Structural Dynamics

9 additional credits of coursework in Structural Engineering or related areas

Transportation Engineering (TPT)

TTE 5205 Traffic Systems Engineering
TTE 5501 Transportation Planning and Economics
TTE 6507 Travel Demand Modeling
6 additional credits of coursework in Transportation Engineering or related areas.

Water Resources (WRS)

4 courses (12 credits) from the following list:

CWR 6235 Free Surface Flow
CWR 6239 Waves and Beach Protection
CWR 6305 U~~u~~rban 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 Hydro-geologic Systems
GLY 6827C Advanced Hydrogeology
CWR 6820 Coastal Waves and Structures
CWR 6538 Advanced Hydrologic Model

3 additional credits in Water Resources engineering or related areas

Comprehensive Exam
Thesis and oral defense are used in lieu of comp

Portfolio

These degrees are coursework only degrees and do not require a thesis; however, a portfolio providing examples of the following is required at the end of the program:

(1) Design of complex systems,
(2) Written and oral communication skills,
(3) Solution of ill-defined or open ended problems.

The Department supports MCE concentration areas in Geotechnical Engineering (GTL), Materials Engineering and Science (MTL), Structural Engineering (STR), Transportation Engineering (TPT) and Water Resources (WRS).

Other Requirements

- A maximum of 12 credits taken outside the CEE department may be applied to meet the degree requirements.
- A maximum of 6 credits of 4000 level courses 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://www.ugs.usf.edu/sab/sabs.cfm

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: 33
Program Level: Masters
CIP Code:
14.0801
Dept. Code: EGX
Program (Major/College): ECE EN

Concentrations:
Geotechnical Engineering (GTL)
~~Masters International Program (MIP)~~ Engineering for Development (EFD)
Materials Engineering and Science (MTL)
Structural Engineering (STR)
Transportation Engineering (TPT)
Water Resources (WRS)

CONTACT INFORMATION

College: Engineering
Department: Civil and Environmental Engineering

Contact Information: www.grad.usf.edu
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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 firms involved in planning, design, research and development, or regulation.

~~College computer facilities are available to all departmental students. In addition, the department has a variety of microcomputers available for student use.~~ The department ~~also~~ 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 unit, 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 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

- Overall GPA 2.75; GPA in major 3.00
- GRE with preferred minimum scores of V 20%, Q 50%, AW 10% or valid fundamentals of engineering (FE) certificate preferred. 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 6.5 (IELTS).
- Two (2) letters of reference (3 letters for students applying to EFD program)~~.~~
- Statement of Purpose.
- Exceptions made on a case-by-case basis where warranted.

DEGREE PROGRAM REQUIREMENTS

Total Minimum Hours: **30 hours**

These degrees are for students doing a Master's thesis. The program consists of a minimum of 24 credit hours of coursework and 6 credit hours of thesis for students with an undergraduate degree in Civil Engineering; students without an Engineering BS will be required to complete undergraduate engineering pre-requisite courses as determined by the Department. Please consult the graduate program coordinator for the list of required courses.

Core Requirements **12 hours minimum**

All students must complete the following pre-requisites:

EGN 3311 Statics
EGN 3343 Thermodynamics I
EGN 3353 Fluid Mechanics
EGN 3615 Engineering Economy[HC2]

~~**(24 hours)**~~

Concentration Requirements **12 hours minimum**

Students may select from the following Concentrations:

Geotechnical Engineering (GTL)

CEG 5115 Foundation Engineering
CES 6118 Applied Finite Elements
6 additional credits of coursework in Geotechnical engineering or related areas.

~~**Masters International Program (MIP)**~~**Engineering for Development (EFD)**

This concentration acknowledges course and international field experience in the area of engineering for development that considers issues of sustainability, environment, health, gender, and society. Requires students take the following four courses that includes an extended international engineering field experience.

ENV 6510 Sustainable Development Engineering

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

ANG 6766 Research Methods in Applied Anthropology
ANG 6730 Socio Cultural Aspects of HIV/AIDS
ANG 6469 Health, Illness and Culture
ANT 4930 Infectious Diseases

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

PHC 6764 Global Health Principles and contemporary Issues
PHC 6761 Global Health Assessment Strategies

CST6990 for full time global training and service in the U.S. Peace Corps as part of ~~the Master's International Program.~~ Engineering for Development.

The six (6) research credits required for the degree are associated with research in a developing world context.

Materials Engineering and Science (MTL)

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

CGN 6933 Aadvanced Construction Materials
CGN 6720 Electrochemical Diagnostic Techniques
CGN 6933 Structural Life Prediction
EMA 5326 Corrosion Control
EMA 6510 Characterization of Materials ~~(3)~~

6 additional credits of coursework in Materials Engineering and Science or related areas

Structures Engineering (STR)

1 course (3 credits) from the following list of design courses:

CES 6706 Advanced Concrete
CES 6835 Design of Masonry Structures
CES 5715C Pre-stressed Concrete

1 course (3 credits) from the following list of analysis courses:

CES 6118 Applied Finite element
CGN 6933 Advanced Structural Analysis
~~EML 6653 Applied Elasticity~~ CGN 6933 Advanced Structural Mechanics
CES 5209 Structural Dynamics

6 additional credits of coursework in Structural Engineering or related areas

Transportation Engineering (TPT)

TTE 5205 Traffic Systems Engineering
TTE 5501 Transportation Planning and Economics
TTE 6507 Travel Demand Modeling
3 additional credits of coursework in Transportation Engineering or related areas.

Water Resources (WRS)

4 courses (12 credits) from the following list:

CWR 6235 Free Surface Flow
CWR 6239 Waves and Beach Protection
CWR 6305 Uurban 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 Hydro geologic Systems
GLY 6827C Advanced Hydrogeology
CWR 6820 Coastal Waves and Structures
CWR 6538 Advanced Hydrologic Model

Comprehensive Exam

Portfolio and oral interview are used in lieu of the comp exam.

Thesis Requirements **6 hours**

The Department supports M.S.C.E. concentration areas in Geotechnical Engineering (GTLMaterials Engineering and Science (MTL), Structural Engineering (STR), Transportation Engineering (TPT) and Water Resources (WRS). Students work with a Major Professor and thesis committee to map out their graduate programs.

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 4000 level courses 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://www.ugs.usf.edu/sab/sabs.cfm

CIVIL ENGINEERING PROGRAM

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

DEGREE INFORMATION

Program Admission Deadlines:

Fall:	February 15
Spring:	October 15
Summer:	February 15

Minimum Total Hours: 33
Program Level: Masters
CIP Code:
14.0801
Dept. Code: EGX
Program (Major/College): ECE EN

Concentrations:
Geotechnical Engineering (GTL)

~~Masters International Program (MIP)~~Engineering for Development (EFD)
Materials Engineering and Science (MTL)
Structural Engineering (STR)
Transportation Engineering (TPT)
Water Resources (WRS)

CONTACT INFORMATION

College: Engineering
Department: Civil and Environmental Engineering

Contact Information www.grad.usf.edu
Other Resources: www.usf4you.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 firms involved in planning, design, research and development, or regulation. College computer facilities are available to all departmental students. In addition, the department has a variety of microcomputers available for student use. The Department also 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 unit, environmental chamber, constant rate of stress consolidometer, triaxial units and superpave testing equipment.

The M.S.E.S. is a research oriented degree for students without an undergraduate degree in engineering. As a major part of the degree requirement, the student is expected to write a thesis that defines, examines, and reports in depth on a subject area relevant to 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

- Overall GPA 2.75; GPA in major 3.00.
- GRE with preferred minimum scores of V 20%, Q 50%, AW 10%.
- TOEFL (International applicants only) 79 (550 paper based exam) or 6.5 (IELTS).
- Two (2) letters of reference (three letters of reference for students applying to EFD program).
- Statement of Purpose.

Exceptions made on a case-by-case basis where warranted.

DEGREE PROGRAM REQUIREMENTS

Total Minimuim Hours: **30 hours**

These degrees are for students without an undergraduate engineering degree who wish to pursue a Master's degree in CEE. This program consists of a minimum of 24 credit hours of coursework and 6 credit hours of thesis:

Pre-Requisites

Students will be required to complete undergraduate engineering pre-requisite courses required for specific courses or as determined by their major professor.

Core Requirements (24 hours)

- A maximum of 9 credits taken outside the CEE department may be applied to meet the degree requirements.
- A maximum of 6 credits of 4000 level courses may be applied to meet the degree requirements.
- A maximum of 6 credits of independent study may be applied to meet the degree requirements.

Concentration Requirements **12 hours minimum**

The Department supports M.S.E.S. concentration areas in Geotechnical Engineering (GTL), Materials Engineering and Science (MTL), Structural Engineering (STR), Transportation Engineering (TPT) and Water Resources (WRS). Students work with a Major Professor and thesis committee to map out their graduate programs.

Students may select from the following Concentrations:

Geotechnical Engineering (GTL)

CEG 5115 Foundation Engineering
CES 6118 Applied Finite Elements
6 additional credits of coursework in Geotechnical engineering or related areas.

~~**Masters International Program (MIP)**~~**Engineering for Development (EFD)**

This concentration acknowledges course and international field experience in the area of engineering for development that considers issues of sustainability, environment, health, gender, and society. Requires students take the following four courses that includes an extended international engineering field experience

ENV 6510 Sustainable Development Engineering

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

ANG 6766 Research Methods in Applied Anthropology
ANG 6730 Socio Cultural Aspects of HIV/AIDS
ANG 6469 Health, Illness and Culture
ANT 4930 Infectious Diseases

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

PHC 6764 Global Health Principles and contemporary Issues
PHC 6761 Global Health Assessment Strategies

~~———~~CST6990 for full time global training and service in the U.S. Peace Corps as part of ~~the Master's International Program~~Engineering for Develpment.

The six (6) thesis~~research~~ credits required for the degree are associated with research in a developing world context.

Materials Engineering and Science (MTL)

At least 2 courses (6 credits) 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 ~~(3)~~
6 additional credits of coursework in Materials Engineering and Science or related areas

Structures Engineering (STR)

1 course (3 credits) from the following list of design courses:

CES 6706 Advanced Concrete
CES 6835 Design of Masonry Structures
CES 5715C Pre-stressed Concrete

1 course (3 credits) from the following list of analysis courses:

CES 6118 Applied Finite element
CGN 6933 Advanced Structural Analysis
~~EML 6653 Applied Elasticity~~ CGN 6933 Advanced Structural Mechanics

CES 5209 Structural Dynamics
6 additional credits of coursework in Structural Engineering or related areas

Transportation Engineering (TPT)

TTE 5205 Traffic Systems Engineering
TTE 5501 Transportation Planning and Economics
TTE 6507 Travel Demand Modeling
3 additional credits of coursework in Transportation Engineering or related areas.

Water Resources (WRS)

4 courses (12 credits) 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 Hydro geologic Systems
GLY 6827C Advanced Hydrogeology
CWR 6820 Coastal Waves and Structures
CWR 6538 Advanced Hydrologic Model

Comprehensive Exam

Thesis and oral defense are used in lieu of comp

Thesis 6 hours

Thesis

COURSES

See http://www.ugs.usf.edu/sab/sabs.cfm

CIVIL ENGINEERING PROGRAM

Doctor of Philosophy (Ph.D.) Degree

DEGREE INFORMATION

Program Admission Deadlines:

Fall:	February 15
Spring:	October 15
Summer:	February 15

Minimum Total Hours: 48/78
Program Level: Doctoral
CIP Code: 14.0801
Dept. Code: EGX
Program (Major/College): ECE EN

Concentrations:
Environmental Engineering (ENV)
Geotechnical Engineering (GTL)
Interdisciplinary Transportation (ITP)
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

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, including sustainable development, has been included in the Civil Engineering domain. Graduates of the programs are prepared for careers in academia and with public agencies or private industry and firms involved in planning, design, research and development, or regulation.

~~College computer facilities are available to all departmental students. In addition, the department has a variety of microcomputers available for student use.~~ The department ~~also~~ 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 for water and air quality analysis, bench and pilot scale reactor studies, field instrumentation for environmental and water resources studies, constant rate of stress consolidometer, triaxial units and superpave testing equipment.

The Ph.D. degree is awarded in recognition of demonstrated scholarly competence and ability to conduct and report original and significant research. Ph.D. students may work in all of the areas of Civil Engineering: Engineering Mechanics, Environmental Engineering, Geotechnical Engineering, Pavement Engineering, Materials Engineering and Science, Structural Engineering, Transportation Engineering and Planning, and Water Resources Engineering.

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

- GRE with preferred minimum scores of V 45%, Q 65%, and AW 50%.
- TOEFL (International applicants only) 79 (550 paper based exam) or 6.5 (IELTS)~~TOEFL (International applicants only) 550 or 213 (CBT)~~.
- Resume.
- Three (3) letters of reference.
- Statement of Purpose.

DEGREE PROGRAM REQUIREMENTS

Total Program Hours:

For students with an approved master's degree	48 hours minimum post-masters
For students without a master's degree	78 hours minimum post-bacc

Coursework requirements **49 hours**

Core Requirements **3 hours minimum**

CGN 6945 – Graduate Research Methods 1 credit hour

- ~~**A maximum of 3 credits (9 credits for students entering without a master's degree) of independent study may be applied to meet the coursework requirement**~~
- ~~**Students entering without a master's degree are required to complete an additional 30 graduate hours.**~~
- ~~**Students work with a Major Professor and a Ph.D. committee to determine their course of study**~~
- ~~**No credits of directed research or graduate instruction methods can be applied to meet the coursework requirement.**~~
- ~~**Up to 30 credits of coursework from an approved master's degree may be applied to meet the coursework requirements.**~~

Additional credits of coursework in Civil Engineering or related areas: 33 credit hours
Directed research or graduate instruction methods may not be used to meet the coursework requirements.
A maximum of 9 credits of independent study may be used to meet the coursework requirements.
Up to 30 credits of coursework from an approved master's degree may be applied to meet the coursework requirements.

Concentration Coursework **15 credit hours**

Environmental Engineering (ENV)

ENV 6002 Physical Chemical Principles	3
EES 6107 Biological Principles	3
ENV 6666 Aquatic Chemistry	3
One course from the following:	
CGN 6933 Green Engineering for Sustainability ~~**or**~~	3
CGN 6933 Green Infrastructure for Sustainable Communities~~**or**~~	3
ENV 6510 Sustainable Development Engineering	3
3 additional credits of coursework in Environmental Engineering	

Geotechnical Engineering (GTL)

CEG 5115 Foundation Engineering	3
CES 6118 Applied Finite Elements	3

9 additional credits of coursework in Geotechnical engineering or related areas. ~~Geotechnical Engineering/Interdisciplinary Transportation (ITP)~~

Materials Engineering and Science (MTL)

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

CGN 6933 Advanced Construction Materials	3
CGN 6720 Electrochemical Diagnostic Techniques	3
CGN 6933 Structural Life Prediction	3
~~CGN 6933~~ EMA 5326 Corrosion Control ~~of Materials~~	3
EMA 6510 Characterization of Materials	3

9 additional credits of coursework in Materials Engineering and Science or related areas

~~3 additional credits of coursework in Materials Engineering and Science or related areas~~

Structures Engineering (STR)

1 course (3 credits) from the following list of courses:

CES 6706 Advanced Concrete	3
CES 6835 Design of Masonry Structures	3
CES 5715C Pre-stressed Concrete	3

~~CES 6118 Applied Finite Element~~
~~CGN 6933 Advanced Structural Analysis~~
~~EML 6653 Applied Elasticity~~

1 course (3 credits) from the following list:

CES 6118 Applied Finite Element	3

~~CES 6841 Rehab and Restoration of Structures~~
~~CES 6103 Experimental Stress Analysis~~
~~EMA 5326 Corrosion Control~~

CGN 6933 Advanced Structural Mechanics	3
CGN 6933 Advanced Structural Analysis	3
CES 5209 Structural Dynamics	3
CGN 6933 Continuum Mechanics	3

9 additional credits of coursework in Structural Engineering or related areas

Transportation Engineering (TPT)

TTE 5205 Traffic Systems Engineering
TTE 5501 Transportation Planning and Economics
TTE 6507 Travel Demand Modeling
6 additional credits of coursework in Transportation Engineering or related areas.

Water Resources (WRS)

4 courses (12 credits) from the following list:

CWR 6235 Free Surface Flow	3
CWR 6239 Waves and Beach Protection	3
CWR 6305 Urban Hydrology	3
CWR 6534 Coastal and Estuary Modeling	3
CWR 6535 Hydrologic Models	3
CGN 6933 Vadose Zone Hydrology	3
CGN 6933 Groundwater Hydraulics	3
CGN 6933 Advanced Computational Fluid Mechanics	3
GLY 6836 Numerical Modeling of Hydrogeologic Systems	3
GLY 6827C Advanced Hydrogeology	4

CWR 6820 Coastal Waves and Structures

CWR 6538 Advanced Hydrologic Model

3 additional credits in Water Resources engineering or related areas

Qualifying Exam

Doctoral students are expected to pass a qualifying examination no later than the semester following the completion of 48 credits of coursework beyond a bachelor's degree. At minimum, the exam will include a written dissertation proposal and oral defense by the dissertation committee. A written exam in the area of concentration may also be required. Poor performance on the qualifying exam based on the judgment of the committee may result in the student failing the exam. If a student does not pass

on the first attempt, he/she may request in writing to repeat the exam. Students who fail the Qualifying Examination the second time will be dismissed by the program.

Dissertation Requirements **20 hours minimum**

CGN 7980 Dissertation (20 hrs minimum)

Additional Requirements **9 hours minimum**

9 credits of additional coursework, graduate instruction methods, dissertation, or directed research are required.

Publication Requirement[HC3]

Students must have at least 1 paper accepted to a peer reviewed journal or peer reviewed conference based on their dissertation research.

COURSES

http://www.ugs.usf.edu/sab/sabs.cfm or http://www2.eng.usf.edu/cee/graduate/gradautecourses.htm