



Graduate Study in Civil & Environmental Engineering

University of South Florida, Tampa, Florida

Revised Fall 2013

A Few Introductions

- Department Chairman:
 - Manjriker Gunaratne (gunaratn@usf.edu)
 - ENC 3300, 974-5822
- Graduate Program Coordinator:
 - Sarina Ergas (sergas@usf.edu)
 - ENC 3212, 974-1119,
 - Office Hours W 1:00-3:00 p.m.; Th 5:00-7:00 p.m.
- Student Affairs/Academic Specialist:
 - Carol Marrero-Placeres, (carol3@usf.edu)
 - ENC 3301, 974-2275

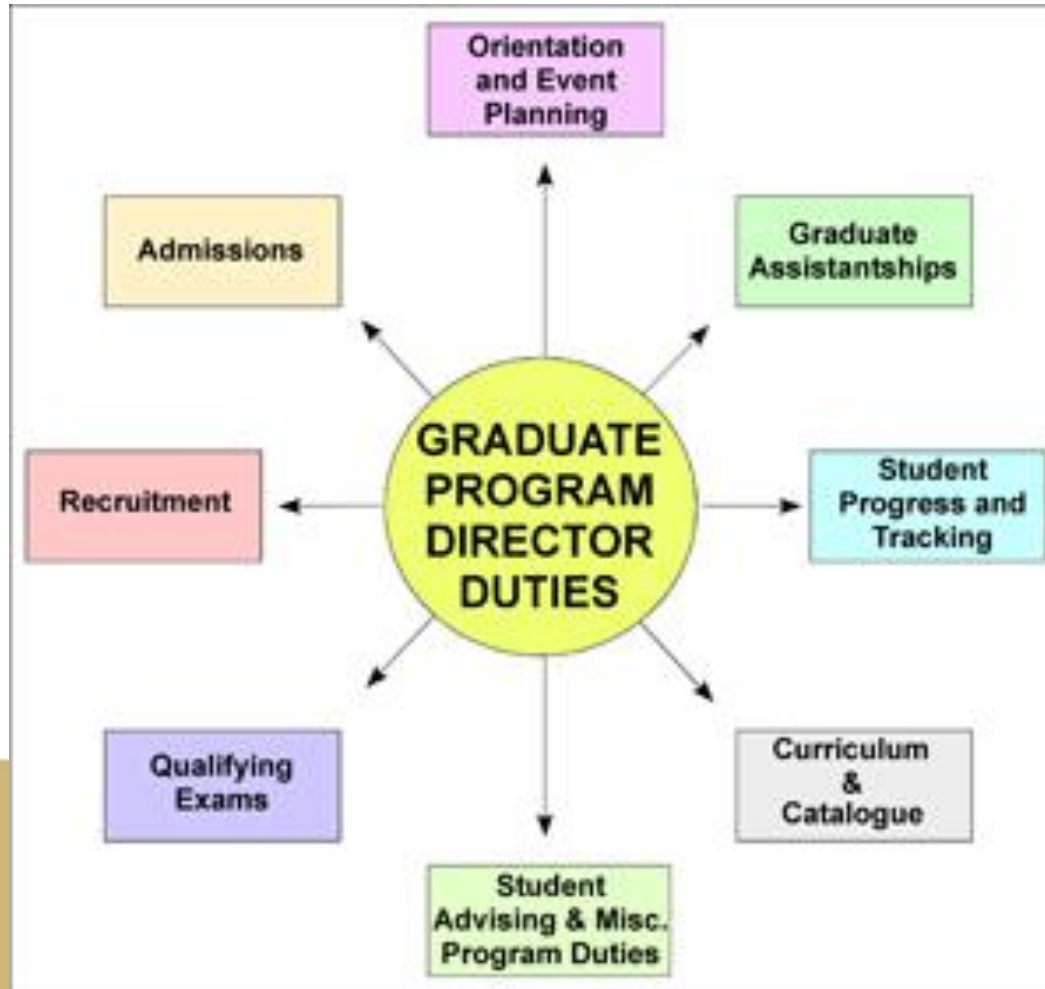
CEE Staff

- Department office ENC 3300
- Academic Services Administrator
 - Barbara Johnson (barbaraj@usf.edu)
 - ENC 3300, 974-5596
- Staff Assistant
 - Ingrid Eversley (ingride@usf.edu)
 - ENC 3300, 974-5595
- Technician
 - Tim Fawcett (tfawcett@usf.edu)

Graduate Program Committee

- Structures & Materials:
 - Dr. Daniel Simkins (dsimkins@usf.edu)
- Geotechnical:
 - Dr. Gray Mullins (gmullins@usf.edu)
- Transportation:
 - Dr. Yu Zhang (yuzhang@usf.edu)
- Water Resources:
 - Dr. Andres Tejada-Martinez (aetejada@usf.edu)
- Environmental:
 - Dr. Qiong Zhang (qiongzhang@usf.edu)

Things the GPC can help with:



Important info for new students

- **August 23, 2013:** Last day to register for fall without late fee.
- Lab Safety Training – <http://usfweb2.usf.edu/eh&s/>
- Responsible Conduct of Research Training - <http://www3.research.usf.edu/dric/docs/citi-registration-instructions.pdf>
- New TA FERPA training: http://www.registrar.usf.edu/presentation/ferpa_quiz/68
- Keys/Late Access to Buildings – see Ingrid Hall
- Office space – Barbara Johnson (priority to PhD students and TAs)
- Domain Accounts – see Barbara Johnson
- Ordering Supplies – see your advisor
- Machine shop – Tom Gage tgage@usf.edu
- Computer questions – help@usf.edu

Student Organizations

Organization	Student Contact	Faculty Contact	Seminars
American Society for Civil Engineers (ASCE)	Daniel Happel (dhappel@mail.usf.edu)	Abla Zayed (zayed@usf.edu)	
Tampa Bay Association of Environmental Professionals	Raymond Fajardo (raymond4@mail.usf.edu)	Jeff Cunningham (cunning@usf.edu)	Structures/Materials Mondays 11:50a- 12:40p ENG 201 ERIC Wednesdays 3:05p -3:55p ENA 105 Transportation Fridays 10:45am-11:35am CUTR 202
Engineers Without Borders (EWB)	Candace Lawrence (candacel@mail.usf.edu)	Andreas Tejada-Martinez (aetejada@usf.edu)	
Florida Water Environment Association (FWEA)	George Dick (georgedick@mail.usf.edu)	Sarina Ergas (sergas@usf.edu)	
American Water Works Association (AWW)	Andrew Filippi (afilippi@mail.usf.edu)	Jeff Cunningham (cunning@usf.edu)	
Engineers for a Sustainable World (ESW)	Ryan Locicero (locicero@mail.usf.edu)	Maya Trotz (matrotz@usf.edu)	
Institute for Transportation Engineers (ITE)	Makarand Gawade makarand@mail.usf.edu	Yu Zhang (yuzhang@usf.edu)	



Grad Student Listserves

- Transportation/Geotech: cee_grad_tpt@lists.cas.usf.edu
- Structures/Materials: cee_grad_str@lists.cas.usf.edu
- Environ/Water Resources: cee_grad_eve@lists.cas.usf.edu
- You will be placed in a listserve for your concentration area
- May be used for sending out info about seminars, student association events, new courses, fellowship opportunities, conferences, etc. of interest to students in a particular sub-discipline of CEE. No spam please!

Why Graduate School?

- Improve your marketability
- Improve your long-term earning potential
- Will be required for PE registration in the future
- Recommended by the American Society of Civil Engineers (ASCE) and the National Academy of Engineering (NAE)
- PhD required for most careers in research and academia
- *Love of learning*

Why CEE at USF?

- A strong commitment to the education of future scholars, researchers and leaders in the CEE profession.
- An exciting place to study and a great place to live.
- Many challenging local infrastructure and environmental problems.
- A strong commitment to finding solutions to global problems.
- Flexibility in degree offerings, areas of study and schedule (some web and evening courses available).
- Faculty, staff, and administration care about you and your success.

Degrees Offered

Degree	Background	Requirement
Non-Thesis Options		
MCE	BS Engineering	30 cr coursework
MEVE	BS Engineering	30 cr coursework
Thesis Options		
MSCE	BS Engineering	24 cr coursework + 6 cr thesis
MSEV	BS Engineering	24 cr coursework + 6 cr thesis
MSES	Undergrad science or related degree	Prerequisites + 24 cr coursework + 6 cr thesis
Doctoral Degrees		
PhD Civil Engineering	BS Engineering*	49 cr coursework + 20 cr dissertation + 9 cr additional coursework or research
PhD EVE	BS Engineering*	

*Engineering Science PhD offered through CoE

CEE Sub-disciplines

- Structures & Materials
- Geotechnical & Geoenvironmental Systems
- Transportation Systems
- Environmental
- Water Resources
- Masters International Program
- Interdisciplinary
- See end of presentation for concentration requirements

Options for Working Students

- A number of graduate courses offered in evenings
- Department offers 2 to 3 graduate courses online every semester (mainly in transportation)
- Courses offered online in other departments (e.g. Engineering Management, GIS)
 - You must be flexible with respect to courses
 - You may need to come into class for exams or presentations
 - No more than 12 credits outside CEE

Thesis or Coursework Masters?

- One is not “better” - depends on interests and goals
- Non-thesis Master’s degree (MCE, MEVE)
 - Coursework only
 - Can accelerate pace (1 year) or take 1-2 classes per semester
- Thesis Master’s degrees (MSCE, MSEV, MSES)
 - Allows you to work closely with a faculty member on research
 - Usually takes longer (1.5-2 years) and requires full-time study
 - Better chance for financial aid during your Master’s study (RA or TA)
 - Prepares you if you are interested in a PhD or research-based career

MCE Requirements

- Most Flexible Program
 - 30 credits of regular coursework (~10 courses)
 - Maximum four courses (12 cr) outside CEE
 - Maximum two 4000 level courses (6 credits)
 - Maximum 6 credits of independent study applied toward coursework requirements
 - Can finish all coursework in 1 year (e.g. 4 classes fall, 4 spring, 2 summer) or take 1-2 classes per semester while working.
- Students electing a concentration must take 15 credits of coursework in the concentration area.

MEVE Requirements

- Four required “principles” classes
 - Physical/Chemical Principles (ENV 6002)
 - Biological Principles (CGN 6933)
 - Aquatic Chemistry (ENV 6666)
 - Sustainability class (Green Engineering, Green Infrastructure, or Sustainable Development)
- At least two from a menu of “processes” classes
 - Physical/Chemical Processes (ENV 6519)
 - Environmental Biotechnology (ENV 6667)
 - Air Pollution (CGN 6933)
 - Air Quality for Env/Transportation Engineers
 - Capstone Environmental/WR Design
- Four Additional Classes

MCE/MEVE Portfolios

- Must be submitted during semester of graduation.
- Oral interview with member of grad committee in your concentration area.
- Outcome 1: Written and Oral Communication Skills

Component A: Written
The student has written a report that demonstrates an ability to plan, compose and integrate written and graphical communication of a project.
Component B: Oral
The student has provided documentation that they have given an oral presentation in a public forum (e.g. class, graduate seminar, public meeting).

MCE/MEVE Portfolios

- Outcome 2: Formulate and solve complex Problems

Component A: Background

Background information and related research is drawn from acceptable journals, reports, textbooks, etc., presents a clear understanding of the problem and provides a rationale for the project objectives.

Component B: Methods

The project design follows logically from the objectives. The process by which the data was generated, gathered, recorded and analyzed is appropriate and clearly described. For theoretical projects, a sound analysis including model development, calibration and verification is provided.

Component C: Findings and Conclusions

The findings build logically from the problem statement, objectives and methods. All data and/or results are accounted for. The interpretations and conclusions are justified

MSCE Requirements

- Twenty-four credits of regular coursework (~8 courses) approved by thesis advisor and committee
- Students electing a concentration must take 12 credits of coursework in the concentration area.
- Max 3 classes (9 credits) outside department
- Max 6 credits of independent study counted towards coursework requirements
- Max 2 courses (6 credits) of 4000 level coursework
- 6 credits of thesis and defense

MSEV Requirements

- Four required “principles” classes
 - Physical/Chemical Principles (ENV 6002)
 - Biological Principles (CGN 6933)
 - Aquatic Chemistry (ENV 6666)
 - Sustainability class (Green Engineering, Green Infrastructure, or Sustainable Development)
- Four courses of student’s choosing
 - Subject to approval from thesis advisor and committee
- 6 credits of thesis and defense

MSES Requirements

- Prerequisite courses determined in consultation with thesis advisor
- 24 credits of regular coursework (~8 courses) approved by advisor
- Max 3 classes (9 credits) outside department
- Max 6 credits of independent study counted towards coursework requirements
- Max 2 courses (6 credits) of 4000 level coursework
- 6 credits of thesis and defense

Master's thesis

- A contribution through research and publication to the field of study:
 - Environmental Engineering
 - Water Resources Structures & Materials
 - Transportation Geotechnical Engineering
 - Interdisciplinary
- Research guided by committee of three or more faculty members
- Thesis may be derived from work done as an RA
- Written thesis and oral defence required
- Be sure to sign up for 2 credits of thesis during final semester.

Accelerated Program

- Enroll in the graduate program in your senior year
- Finish both BS and master's requirements efficiently
- Receive both degrees at the end of program
- All standard entrance and graduation requirements apply
 - If GPA is maintained at 3.3 or above, than you may DOUBLE-COUNT SIX CREDITS (a “discount” on your course requirements).
- Bright Future Scholarship students should discuss their situation with a financial aid advisor.

Master's International (MI) Program

- Cooperative program between USF and Peace Corps

$$1 + 2 = 3$$

- One year on campus
- Plus two years in Peace Corps
- = MSCE, MSEV or MSES degree
- MI placements include Mexico, Uganda, Zambia, Panama, Mali, Peru, Dominican Republic

MI Program Requirements

- Follow guidelines for MSEV, MSCE or MSES degree depending on your interests
- Three core subject courses:
 - Applied anthropology course
 - Global public health course
 - Sustainable Development Engineering (CGN 6933)
- Six credits thesis (done during Peace Corps service)
- For more information contact Dr. James Mihelcic, MI program director

Options for non-Engineers

- Welcome to the greatest profession in the world!
- Master of Science in Engineering Science degree (MSES)
- PhD in Engineering Science hosted by CEE
- Options for professional registration as an engineer:
 - Prerequisites + MCE, MEVE, MSCE or MSEV degree
 - Students seeking PE registration in Florida who do not have an ABET accredited engineering degree should consult the Florida Board of Professional Engineers Chapter 61G15-20: Application for Licensure, Education Requirements and Experience

“Typical” Licensure Requirements for CEE

- ABET-accredited degree (BS or Masters plus specific list of prerequisite courses)
- NCEES Fundamentals of Engineering (FE) Exam
- Engineer-in-Training Internship (4 yrs, 3 yrs for MCE or MSCE students)
- Application for Licensure - Character References & Experience
- NCEES Principles and Practices of Engineering (PE) Exam
- Licensure!
- For more information: www.flpe.org, 850-521-0500

Non-engineers who want to earn PE:

- 32 cr Math and Science, 48 credits engineering
 - 2 semesters calculus, differential equations, physics, chemistry, statistics, additional math and science courses
 - 12 credits engineering core: statics, thermo, fluids, economics
 - 36 cr additional engineering courses in concentration area (includes course taken for masters)
 - See <http://cee.eng.usf.edu/graduate/degrees.htm> for more information
- Many students complete some pre-reqs before coming to USF or as non-degree seeking students at USF

PhD Requirements

- **Total Minimum Hours: 78**
- **Coursework Requirement:** 48 credits (includes up to 30 cr of courses taken for master's):
 - ≥ 15 credits in the area of concentration.
 - ≤ 9 credits of independent study.
 - ≤ 6 credits of master's thesis
 - No credits of directed research or graduate instruction methods may be used toward the coursework requirement.
- **CGN 6945:** 1 cr course Graduate Research Methods
- **Additional requirements:** 9 cr of additional coursework, dissertation or directed research.

Ph.D. Dissertation

- A major contribution to the field of study through research and publication
 - Minimum 20 credits dissertation required
 - Written Proposal + Oral Candidacy Exam normally taken within 3-4 semesters of entering program
 - You may not register for dissertation credits until advanced to candidacy
 - Publication requirement: one article accepted to peer reviewed journal (with letter of acceptance provided)
 - Doctoral Dissertation Defense

Academic Committees

- Masters Degrees
 - MCE, MEVE: Grad Program Committee reviews portfolio and interviews student
 - MSCE, MSEV, MSES: Min 3 faculty members
- Ph.D. Committee
 - Min 5 faculty members
 - Min 2 members from CEE
 - Min 1 member from Engineering outside Civil
 - Min 1 member from outside Engineering
 - Outside chair at defence (not counted in 5, must be outside CEE)
- Two faculty may serve as Co-chairs

Electronic Thesis/Dissertation Filing:

Overview of ETD Time Lines and Benchmarks
FALL AND SPRING SEMESTERS

Students Must Attend a Live ETD Workshop or Complete an Online ETD Tutorial the Semester Prior to Graduation

Deadline to Register for Graduation and Register for ETD Submission

Week 4

ETD WORKSHOP #1

Deadline for Submission of Defended and Approved Theses

Week 12

ETD WORKSHOP #2

Deadline for Submission of Defended and Approved Dissertations

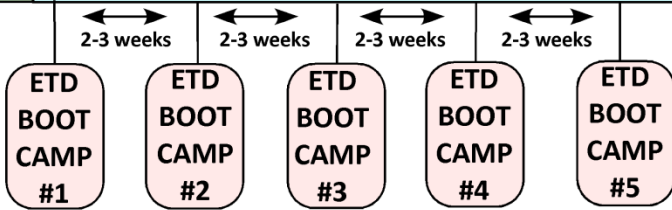
Week 14

Deadline to have any Revisions to the ETD Approved by the Graduate School

Week 16.5

SEMESTER A

SEMESTER B (Semester of Graduation)



ETD Boot Camps will be offered every two to three weeks throughout the semester. Boot Camps are designed to provide assistance to students in all aspects of the ETD process. No appointments will be required. The Graduate School Editorial "team" will be available to assist students.

Finding a thesis/dissertation advisor

- Close collaboration between faculty advisor and student so choose wisely:
 - Read their profiles on the department website
 - Read their publications
 - Talk to them about your common research interests
 - Talk to them about funding opportunities in their research groups
 - Talk to their students
 - Look for a good fit between their mentoring style and the way you work best.

CEE faculty: Structures, Materials, Geotechnical

Manjriker Gunaratne (chair) gunaratn@usf.edu	Pavement Management Systems, Pavement Design, Probabilistic and Numerical Methods in Pavement and Geotechnical Engineering
Gray Mullins gmullins@usf.edu	Large Scale Testing, Field Instrumentation, Subsurface Sensing and Characterization, Full-scale testing of bridges and foundations; StatNamic testing; Alternative load testing techniques.
Alberto Sagues sagues@usf.edu	Materials engineering; Corrosion performance of materials for construction and energy applications; Failure analysis and prevention; Physical metallurgy
Daniel Simkins dsimkins@usf.edu	Computational Mechanics, Numerical Analysis, Composite Materials, Computational Engineering
Rajan Sen sen@usf.edu	Bridge design; Dynamic response of structures; Dynamic behavior of piles; Pre-stressed concrete.
Abla Zayed zayed@usf.edu	Materials engineering; Mechanical performance of concrete, metals, and composites

CEE Faculty: Transportation/Geotechnical

Jian (John) Lu jl2@usf.edu	Traffic operations, intelligent transportation systems, systems design, safety, data acquisition, and pavement performance modeling.
Abdul Pinjari apinjari@usf.edu	Transportation Planning and Travel Demand Modeling, Econometric Modeling of Travel Behavior, Integrated Land-use Travel Demand Modeling, Sustainable Transportation, Freight Transportation, Travel Data Collection, Safety
Qing Lu glu@usf.edu	Pavement design – analysis and preservation, asphalt and asphalt mixes; transportation infrastructure system management; and surface technologies for orthotropic steel deck bridges.
Steven E. Polzin polzin@cutr.usf.edu	Public transportation, systems evaluation, transportation planning, planning process design, policy analysis, mobility needs analysis, travel behavior, economic impacts
Yu Zhang yuzhang@usf.edu	Air Transportation, Transportation Network Modeling and Operations, Transportation Economics and Planning, Freight Transportation and Transportation Sustainability

CEE Faculty: Water Resources

Mahmood Nachabe nachabe@usf.edu	Subsurface hydrology; fate and transport of chemicals in the vadose zone; stochastic hydrology; uncertainty in distributed models.
Mark Ross maross@usf.edu	Hydrologic, hydraulic, and water quality modeling; surface and groundwater interaction, GIS applications in hydrology; lake and estuary water quality management; estuary sediment dynamics
Andres Tejada-Martinez aetejada@usf.edu	Finite element methods for fluids, Subgrid-scale parameterizations for large-eddy simulation (LES) of turbulent flows, Novel LES methodologies, Numerical simulations of ocean turbulence.
Kalanithy Vairavamoorthy vairavk@grad.usf.edu	Design of urban water supply systems operating under uncertainties associated with global change; Optimization, risk assessment and life-cycle management of urban water systems.

CEE Faculty: Environmental

Jeff Cunningham cunning@usf.edu	Contaminant fate and transport; physical, chemical and biological processes for water treatment; water resources and re-use; remediation of contaminated soil and groundwater.
Sarina Ergas sergas@usf.edu	Biological treatment, biological air pollution control, membrane bioreactors, nutrient removal and bioremediation.
James Mihelcic jm41@usf.edu	Sustainable development, Green engineering, Global water and sanitation, Engineering education reform.
Amy Stuart astuart@health.usf.edu	Transport and transformation of pollutants in the atmosphere; computational modeling; human exposures to air pollutants.
Maya Trotz matrotz@usf.edu	Application of chemical principles to understand pollutant behavior (e.g. arsenic) in natural and engineered systems.
Daniel Yeh dhyeh@usf.edu	Membrane and biological processes for water and wastewater, industrial waste minimization, soil and sediment remediation.
Qiong (Jane) Zhang qiongzhang@usf.edu	Water-energy nexus, process and system modeling, green engineering, sustainability assessment and education.

Financing Your Graduate Education

- Graduate scholarships/fellowships available from many agencies around the country (check department, college and graduate school websites for more information)
- TAs assigned by Dept. Chair – new doctoral students priority.
- RAs at discretion of individual faculty members.
- Full-time students may be employed half (20 hrs/wk) or quarter-time (10 hrs/wk) to assist faculty with research
- Assistantships carry a monthly stipend and normally come with a tuition waiver and health insurance
- Travel grants are available to attend conferences and professional meetings

Transferring courses

- Transfer up to 12 credits of coursework taken:
 - During undergraduate degree and not used to meet BS requirements.
 - Taken as a non-degree seeing student at USF
 - Taken in another USF program and not used to meet degree requirements
 - Taken as a graduate student at another university and not used to meet degree requirements
 - Submit transfer form

Staying in the Graduate Program

- Take a minimum of 6 hours of graduate credit every three continuous semesters.
- File leave of absence form if you are not taking classes (MI students have zero credit course option)
- Remain in good standing ($\text{GPA} \geq 3.0$) throughout program
- Only one C or C+ grade can be used for meeting graduation requirements (no C- grades counted)
- GPA below 3.0 → Probation 1 (warning) → Probation 2 (need to meet with GPC to discuss) → Academic Dismissal

Time Limits

- Doctoral programs
 - All courses applied to the degree must be completed within 7 years.
- Masters programs
 - Degrees must be completed within 5 years from date of admission.
 - All courses applied to the degree must be completed within 7 years.

Some departmental forms

- Program of study forms
 - PhD, MSCE, MSEV, MSES degrees – sign off by your advisor
 - MEVE degrees – sign off by Dr. Cunningham
 - MCE degrees – sign off by Dr. Ergas
 - You will need to update with ACTUAL courses taken at graduation!
- Proposal, thesis and dissertation defense
- Sign up for independent study, dissertation, thesis, directed research or dissertation hours

Some Grad School Forms (www.grad.usf.edu/student-forms)

- Accelerated program application
- Admission to doctoral candidacy
- Application for graduation
- Change of hours (grad school petition)
- Change of program application
- Committee appointment form
- Dual degree application
- Graduation forms
- Leave of absence request
- Time limit extension request
- Transfer of courses

On Being a Graduate Student

- Qualities that will make you successful:
 - Hard work!
 - Thirst for knowledge
 - Self-motivation, self-initiative
 - Performing above and beyond assigned duties
 - Being a team-player and contributor
- USF Civil Engineering graduate alumni well placed in academia, government agencies and industry.

Concentration Requirements

- **Geotechnical Engineering (GTL)**
 - Foundation Engineering
 - Applied Finite Elements
 - additional credits in Geotechnical Engr or related areas as required by degree program
- **Transportation Engineering (TPT)**
 - TTE 5205 Traffic Systems Engineering
 - TTE 5501 Transportation Planning and Econ
 - TTE 6507 Travel Demand Modeling
 - additional credits in Trans Engr or related areas as required by degree program.

Structural Engineering (STR) Master's

- At least one of the following design courses:
 - CES 6706 Advanced Concrete
 - CES 6835 Design of Masonry Structures
 - CES 5715C Prestressed Concrete
- At least one of the following analysis courses:
 - CES 6118 Applied Finite Elements
 - EML 6653 Applied Elasticity
 - CGN 6933 Advanced Structural Analysis
 - CES 5209 Structural Dynamics
- additional credits in struc. engr. or related areas as required by degree program

Structural Engineering (STR) PhD

- At least one from the following :
 - CES 6706 Advanced Concrete
 - CES 6835 Design of Masonry Structures
 - CES 5715C Prestressed Concrete
 - CES 6118 Applied Finite Elements
 - EML 6653 Applied Elasticity
 - CES 5105C Advanced Structural Analysis
- At least one of the following :
 - Repair and Rehabilitation of Structures
 - Experimental Stress Analysis
 - Corrosion control
 - Finite elements II, III

Materials Engineering (MTL)

- Two course from the following:
 - CGN 6933 Advanced Construction Materials
 - CGN 6720 Electrochemical Diagnostic Techniques
 - CGN 6933 Structural Life Prediction
 - EMA 5326 Corrosion Control
 - EMA 6510 Characterization of Materials
- additional credits in Materials Engineering or related areas as required by degree program

Water Resources (WRS)

- 4 courses 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 Models
- additional credits in WR engineering or related areas as required by degree program.

Environmental Engineering (EVE)

- Four required principles courses:
 - Physical/Chemical Principles (ENV 6002)
 - Biological Principles (CGN 6933)
 - Aquatic Chemistry (ENV 6666)
 - Sustainability class (Green Engineering, Green Infrastructure, or Sustainable Development)
- Additional courses in environmental engineering as required by degree program