Graduate Curriculum Approval Form
Changes to Graduate Majors

USF UNIVERSITY OF SOUTH FLORIDA

Degree Program CIP Code	14.0801
Degree *(i.e. M.A., Ph.D., etc.):*	MSCE
Name of Major *(e.g. Biology)*	Civil Engineering
Name of affected Concentration(s) *(e.g. Botany)*	Structures, Geotechnical, Water Resources, Materials, Transportation, Engineering for International Development
Proposed Effective Term *(e.g Fall 2017)*	Fall 2018
Faculty Contact	Sarina Ergas
Email	sergas@usf.edu

APPROVALS	Name	Signature	Action	Date
Dept. Chair	Manjriker Gunaratne		☒ Approve ☐ Not approved ☐ Comments attached	1/19/18
School Committee Chair (if applicable)			☐ Approve ☐ Not approved ☐ Comments attached	
College Committee Chair			☐ Approve ☐ Not approved ☐ Comments attached	
College Dean/ Associate Dean	Sanjukta Bhanja	Sanjukta Bhanja	☒ Approve ☐ Not approved ☐ Comments attached	1/24/18
Concurrence ☐ N/A ☐ Needed	Dept: Chair:		☐ Concurs ☐ Doesn't concur ☐ Comments attached	
Grad Council	☐ Approve ☐ Not approved ☐ Tabled ☐ Comments	Graduate Studies	☐ Approve ☐ Disapprove	

Summary of Changes – Select all that apply:

Admissions Section:

- ☐ Change Priority Admission Deadlines
  - ☐ Fall: _____
  - ☐ Spring: _____
  - ☐ Summer: _____
  - ☐ To "fall admissions only"
- ☐ From Regular to Direct Receipt Admissions
- ☐ From Direct Receipt to Regular Admission
- ☒ Admission Requirements

Curriculum Requirements

- ☐ Current Curriculum Requirements
  - ☐ Core
  - ☐ Add New Concentration, Specialization, or Track*
  - ☐ Delete Concentration, Specialization, or Track
  - ☐ Thesis/Dissertation
  - ☐ Comprehensive/Qualifying Exam
- ☒ Other: __Revert to 2017-18 catalog for changes in core that were not approved last year_

**Requires submission to APAC for comment/clearance*

Why are these changes necessary?

a) We were told that prior requested changes in our core were not approved because they are not aligned with BOG requirements so we therefore did not implement these changes in the curriculum. We were surprised to see that the 2017-18 catalog reflected the changes. We therefore request that we revert to the old catalog while we have a wider discussion of the core for CE.

b) We were advised to change the word "concentration" to "specialization" and then told that it didn't make any difference in terms of BOG requirements. We therefore would prefer to revert to "concentrations" since it helps with tracking our students.

c) Change from fundamentals of engineering (FE) certification to either FE or professional engineering (PE) certification as an admission requirement. Many of our applicants have been working as practicing engineers for > 4 years and have achieved PE licensure.

CURRICULUM 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. major. 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 major.

Total Minimum Hours **30 hours**
Core Courses – 3 hours
Coursework – 21 hours
Thesis – 6 hours

The major consists of a minimum of 24 credit hours of coursework and 6 credit hours of thesis. For students pursuing a ~~Specialization~~concentration area (as detailed below), the 24 credit hours of coursework will include at least 12 credit hours of ~~Specialization~~Concentration Requirements, with remaining credit hours to consist of core coursework and technical electives as approved by the Department. For students pursuing no ~~Specialization~~concentration area, the 24 credit hours of coursework will consist wholly of core coursework and 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 Director for more information.

Common Core Courses – 3 hours minimum

CGN 6945	2	Graduate Research Methods in Civil and Environmental Engineering

And at least one of the following:

~~CGN 6933~~CES 6935	1	~~Selected Topics:~~ Graduate Structures/Materials Seminar
ENV 6935	1	Environmental/Water Resources Seminar
TTE 6930	1	Grad Transportation Seminar

~~Specialization~~Concentration Requirements -12 hours minimum
The Department supports M.S.C.E. ~~specialization~~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 ~~Specialization~~concentrations, or may select no ~~specialization~~concentration.

Engineering for International Development (EFD)
This ~~specialization~~concentration acknowledges coursework and international field experience in the area of engineering for international development that considers issues of sustainable development, water, sanitation, and health (WaSH), gender, and society. This graduate ~~specialization~~concentration requires 1) coursework in global health, applied anthropology (medical, environmental, and development), and Water, Sanitation, Hygiene (WaSH) engineering, 2) a development-focused research component, and 3) a long-term overseas field experience in sustainable development as a WaSH engineer, which in most cases will form the basis of the student's master's thesis The international field experience allows a student to remain enrolled as a full-time student (with zero tuition/fees) and gain development experience serving with Peace Corps and Non-governmental Development Organizations. Graduate-s are competitive for employment in the global WaSH development field.

ENV 6510 Sustainable Development Engineering

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

ANG 6766	3	Research Methods in Applied Anthropology
ANG 6730	3	Socio-cultural Aspects of HIV/AIDS
ANG 6469	3	Selected Topics: Health, Illness and Culture

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

PHC 6764	3	Global Health Principles & Contemporary Issues
PHC 6761	3	Global Health Assessment Strategies

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

Students engaged in full-time global training and/or service as part of the EFD ~~specialization~~concentration (e.g., in the U.S. Peace Corps, with a non-governmental organization, UNESCO-IHE, or equivalent) may register for CST 6990 for 0 credit hours while in their country of service/research.

Geotechnical Engineering

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

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

CGN 6933	Selected Topics: Advanced Construction Materials
CGN 6720	Electrochemical Diagnostic Techniques
-CES 6010	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

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
CES 6230	Advanced Structural Mechanics
-CES 6144	Advanced Structural Analysis
CES 5209	Structural Dynamics

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

Transportation Engineering

TTE 5205	Traffic Systems Engineering
TTE 5501	Transportation Planning and Economics
TTE 6507	Travel Demand Modeling or CGN 6933 Selected Topics: Statistical and Econometric Methods

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

Water Resources

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~~CWR 6105	~~Selected Topics:~~ Vadose Zone Hydrology
CGN 6933	Selected Topics: Groundwater Hydraulics
CGN 6933	Selected Topics: Advanced Computational Fluid Mechanics
CWR 6820	Coastal Waves and Structures
CWR 6538	Advanced Hydrologic Model
CGN 6933	Selected Topics: Advanced Numerical Methods

CGN 6933	Selected Topics: Global Sustainability
CGN 6933	Selected Topics: Ecological Engineering

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 ~~Specialization~~concentration, the thesis must be associated with research in a developing-world context.

Other Requirements

- A maximum of 9 graduate level 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