#### Master of Science Engineering Science (MSES) with Concentration in Civil Engineering

#### **Total Minimum Hours: 30**

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:

#### **Degree Program Requirements:**

The programs consist 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:**

Students may select from the following concentrations.

#### Environmental Engineering (ENV)

ENV 6002 Physical Chemical Principles

EES 6107 Biological Principles of Environmental Engineering

**ENV 6666 Aquatic Chemistry** 

One of the following:

CGN 6933 Green Engineering for Sustainability

CGN 6933 Green Infrastructure for Sustainable Communities

**ENV 6510 Sustainable Development Engineering** 

12 additional credits of coursework based on approval of graduate committee.

#### Geotechnical Engineering (GTL)

CEG 5115 Foundation Engineering

**CES 6118 Applied Finite Elements** 

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

#### 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 Protection

**EMA 5326 Corrosion Control** 

EMA 6510 Characterization of Materials

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

#### Structural 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 Prestressed Concrete** 

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

CES: 6118 Applied Finite Elements

CGN 6933 Advanced Structural Analysis

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

CWR 6538 Advanced Hydrologic Models

CWR 6820 Coastal Waves and Structures

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

The department supports MSES concentration areas in Geotechnical Engineering (GTL), Materials Engineering and Structural 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.

#### **Courses**

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

# MASTER OF SCIENCE IN ENGINEERING SCIENCE (MSES) ENVIRONMENTAL (ENV)

Name:		Term / Ye	ear Admitted in	nto Program	
USF ID #					
Address:					
Phone:					
Email:					
Advisor:					
30 Total Credits of Coursewo	rk:				
Course Title	Number	Credits	Semester	Outside CEE?	Grade
Required Core Courses:					
Physical Chemical Principles	ENV 6002	3			
in Énvironmental Engineering					
Biological Principles	EES 6107	3			
Aquatic Chemistry	ENV 6666	3			
At least one of the following:					
Green Engineering for Sustainability	CGN 6933	3			
Green Infrastructure for Sustainable Communities	CGN 6933	3			
Sustainable Development Engineering	ENV 6510	3			
Additional 12 Credits Based o	n Approval froi	m Thesis Co	mmittee:		
Thesis:					
Thesis: Masters	CGN 6971				
Additional courses, if any:					
, ,					
		Total Cred	dits Outside CE	Ė	
			dits at 4000 Lev		
		Total Cred			
		Total Cre			
			- (	,	
Advisor: Print or Type Name, S	ignature, and Da	ate			

Graduate Program Coordinator: Signature and Date

## MASTER OF SCIENCE IN ENGINEERING SCIENCE(MSES) GEOTECHNICAL ENGINEERING (GTL)

Curriculum Program of Study Form (updated 02/14)

Name:	Term/Year Admitted into Program:								
USF ID#									
Address:									
Phone:									
Email:									
Advisor:									
	☐ Concentration in Engineering for Development*  *Requirements: ☐ Sus Dev Eng ☐ Applied Anthropology ☐ Global Public Health ☐ Peace Corps Services								
30 Total Cred	30 Total Credits of Coursework:								
С	ourse Title	Number	Credits	Semester	Outside CEE?	Grade			
Required Cor	e Courses:								
Foundation En	ngineering	CEG 5115	3						
Applied Finite	Elements	CES 6118	3						
6 additional c	redits of coursework in	n Geotechnica	or related	areas:					
			3						
			3						
12 credits of	electives:								
Thesis (minin	num 6 credits required	١٠							
Thesis: Master	•	CGN 6971							
THESIS. MASIE	15	CGN 097 1							
			To tal Over	lita Outaida OFF					
				dits Outside CEE					
• ≤ 3 COL	urses outside CEE		Total Credits at 4000 Level						
• ≤6 cre	edits of 4000 level		Total Credits Independent Study						
• ≤ 6 cre	edits independent stud	dv	Total Cred	lits (30 required)					
	its of thesis	,							
• o credi	its of thesis								
Advisor, Drint	or Type Name Cianatur	a and Data		<del></del>					
Advisor. Print	or Type Name, Signatur	e, and Date							
Graduate Prog	gram Coordinator: Signa	ture and Date							

## MASTER OF SCIENCE IN ENGINEERING SCIENCE (MSES) MATERIALS ENGINEERING (MTL)

Curriculum Program of Study Form (updated 02/14)

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Name: USF ID #			eriii/Tear A	dmitted into Pro	grain:			
Address:								
Phone:								
Email:								
Advisor:								
☐ Concentration in Engineering for Development*  *Requirements: ☐ Sus Dev Eng ☐ Applied Anthropology ☐ Global Public Health ☐ Peace Corps Services								
30 Total Credits of Coursework:								
	Course Title	Number	Credits	Semester	Outside CEE?	Grade		
At least two o	of the following:							
Advanced Cor	nstruction Materials	CGN 6933	3					
Electrochemic	al Diagnostic Techniques	CGN 6720	3					
Structural Life	Prediction	CGN 6933	3					
Corrosion Con	ntrol	EMA 5326	3					
Characterization	on of Materials	EMA 6510	3					
9 Additional of	credits in Materials Engine	eering or relat	ed areas:					
			3					
			3					
			3					
9 credits of electives:								
			3					
			3					
			3					
	num 6 credits required):		T					
Thesis: Maste	rs	CGN 6971						
• <3.001	urses outside CEE			lits Outside CEE lits at 4000 Leve				
				lits Independent				
	edits of 4000 level		lits (30 required)					
• ≤6 cre	edits independent study			(00 10 4	,			
• 6 credi	its of thesis							
Advisor: Print	or Type Name, Signature, a	and Date		_				
Graduate Prog	gram Coordinator: Signature	e and Date						

### **MASTER OF SCIENCE IN ENGINEERING SCIENCE (MSES)** STRUCTURAL ENGINEERING (STR) Curriculum Program of Study Form (updated 02/14)

	oumounum rogram o	· Clauy · Cii	(upaatoa 02, 1.1)					
Name:	Ter	m/Year Adn	nitted into Program					
USF ID #								
Address:								
Phone:								
Email: Advisor:								
	og for Dovolonmont*							
□ Concentration in Engineering for Development*  *Paguiroments: □ Sus Day Eng □ Applied Apply □ Global Bublic Health □ Beace Corps Serv								
*Requirements: ☐ Sus Dev Eng ☐ Applied Anthropology ☐ Global Public Health ☐ Peace Corps Set  30 Total Credits of Coursework:								
Course Title	Number	Credits	Semester	Outside CEE?	Grade			
At least one of the following (d		1						
Advanced Concrete Design	CES 6706	3						
Design of Masonry Structures	CES 6835	3						
Prestressed Concrete	CES 5715C	3						
At least one of the following (a	nalysis course):							
Applied Finite Elements	CES 6118	3						
Advanced Structural Analysis	CGN 6933	3						
Advanced Structural Mechanics	CGN 6933	3						
Advanced Mechanics of Material	s CES 5105C	3						
Structural Dynamics	CES 5209	3						
6 additional credits of coursework in Structural Engineering or related areas:								
12 credits of electives:								
		3						
		3						
		3						
		3						
Thesis (minimum 6 credits req	uired):							
Thesis: Masters	CGN 6971							
THESIS. WASTETS	00110371							
		Total Cross	lits Outside CEE					
			lits at 4000 Level					
<ul> <li>≤ 3 courses outside (</li> </ul>	CEE			udv				
• ≤ 6 credits of 4000 le	lits Independent St	uuy						
		rotal Cred	lits (30 required)					
• ≤ 6 credits independ	ent study							
<ul> <li>6 credits of thesis</li> </ul>								
Advisor: Print or Type Name, Sig	nature, and Date							

Graduate Program Coordinator: Signature and Date

### MASTER OF SCIENCE IN ENGINEERING SCIENCE (MSES) TRANSPORTATION ENGINEERING (TPT)

Curriculum Program of Study Form (updated 02/14)

Name:	Term/Year Admitted into Program:							
USF ID #					·			
Address:								
Phone:								
Email:								
Advisor:								
	tion in Engineering for De							
*Requiremen	its: ☐ Sus Dev Eng ☐ App	olied Anthrop	ology ⊔Glob	oal Public Health	□Peace Corps	Services		
30 Total Credits of Coursework:								
	Course Title	Number	Credits	Semester	Outside CEE?	Grade		
Required Cor	e Courses:							
Traffic System	s Engineering	TTE 5205	3					
Transportation	Planning and Economics	TTE 5501	3					
Travel Deman		TTE 6507	3					
	redits of coursework in T	ransportation	Engineering	or related areas	<b>:</b>			
		<u> </u>						
9 credits of el	lectives:							
Thesis (minin	num 6 credits required):							
Thesis: Maste		CGN 6971						
THOSIS. Waste	13	0011 037 1						
			Total Crad	its Outside CEE				
. 2				its at 4000 Level				
	urses outside CEE			its Independent S	Study			
<ul> <li>≤ 6 cre</li> </ul>	edits of 4000 level				study			
<ul> <li>≤ 6 cre</li> </ul>	• ≤ 6 credits independent study  Total Credits (30 required)							
<ul> <li>6 cred</li> </ul>	its of thesis							
- 0 0 0	113 01 1110313							
				-				
Advisor: Print	or Type Name, Signature, a	and Date						
Graduate Prog	gram Coordinator: Signature	and Date		-				

### **MASTER OF SCIENCE IN ENGINEERING SCIENCE (MSES)** WATER RESOURCES ENGINEERING (WRS)

	Curric	uium Program	or Study Fo	orm (updated 02)	(14)		
Name:	Term/Year Admitted into Program:						
USF ID #							
Address:							
Phone:							
Email: Advisor:							
	tion in Engineering for D	evelonment*					
			ology □Glo	hal Public Healt	h □Peace Corn	s Services	
*Requirements: ☐ Sus Dev Eng ☐ Applied Anthropology ☐ Global Public Health ☐ Peace Corps Se							
C	Course Title	Number	Credits	Semester	Outside CEE?	Grade	
A minimum o	f 4 courses (12 credits) f	rom the follow	ing:				
Free Surface F	Flow	CWR 6235	3				
Waves and Be	each Protection	CWR 6239	3				
Urban Hydrolo	ogy	CWR 6305	3				
Coastal and E	stuary Modeling	CWR 6534	3				
Hydrologic Mo	odels	CWR 6535	3				
Advanced Hyd	drologic Models	CWR 6538	3				
Coastal Wave	s and Structures	CWR 6820	3				
Vadose Zone	Hydraulics	CWR 6933	3				
Groundwater I		CGN 6933	3				
Advanced Cor Mechanics	nputational Fluid	CGN 6933	3				
Numerical Mod Systems	deling of Hydrogeologic	GLY 6836	3				
Advanced Hyd	drogeology	GLY 6827C	3				
3 additional	credits of coursework in	Water Resource	ce Engineer	ing or related ar	eas:		
			3				
9 credits of el	lectives:						
Thesis (minin	num 6 credits required):						
Thesis: Maste	rs	CGN	6971				
			Total Credi	ts Outside CEE			
• ≤ 3 courses outside CEE Total Credits at 4000 Level							
• < 6 cre	credits of 4000 level Total Credits Independent Study						
Total Credits (30 required)					•		
	edits independent study		<u> </u>			•	
<ul><li>6 cred</li></ul>	its of thesis						
Advisor: Print	or Type Name, Signature,	and Date		_			

Graduate Program Coordinator: Signature and Date