

## MSCE Curriculum Options:

### Typical MSCE Curriculum, by Semester

Note that the Masters student will choose a civil engineering sub-discipline in which to focus (environmental, geotechnical, structural, transportation, or water resources/coastal). The curriculum for each sub-discipline focus area will include a combination of a) engineering courses, b) supporting area courses, and for the thesis/project option, thesis project hours. **All students will take the civil engineering in the coastal environment core (CE 501 and CE 502).** Students in the thesis/project option will take a research integrity course.

The following course lists are to be used as a guide when developing a specific curriculum. Note: some courses in one focus area may be appropriate for another focus area.

#### Environmental Engineering Focus Area Course List

- CE 571 Biological Waste Treatment Processes
- CE 572 Groundwater and Remediation
- CE 573 Natural Treatment Systems
- CE 574 Industrial and Hazardous Waste Treatment
- CE 575 Decentralized Wastewater Management
- CE 576 Storm Water Management

#### Geotechnical Engineering Focus Area Course List

- CE 540 Advanced Soil Mechanics, 3 cr.
- CE 541 Soil Dynamics, 3 cr.
- CE 542 Foundation Analysis and Design, 3 cr.
- CE 543 Earth Structures, 3 cr.
- CE 544 Soil Behavior, 3 cr.

#### Structural Engineering Focus Area Course List

- CE 580 Advanced Structural Analysis, 3 cr.
- CE 581 Advance Reinforced Concrete Design, 3 cr.
- CE 583 Advanced Steel Design, 3, cr.
- CE 585 Prestressed Concrete Design, 3 cr.

#### Transportation Engineering Focus Area Course List

- CE 551 Traffic Engineering, 3 cr.
- CE 552 Highway Engineering, 3 cr.
- CE 553 Advanced Highway Materials and Construction, 3 cr.
- CE 554 Computer Methods in Transportation, 3 cr.

## Water Resources/Coastal Engineering Focus Area Course List

- CE 560 Coastal Hydrodynamics, 3 cr.
- CE 561 Littoral Processes, 3 cr.
- CE 562 Coastal and Port Engineering, 3 cr.
- CE 563 Numerical Modeling of Coastal Hydrodynamics, 3 cr.

## Supporting Area Course List

- MA 436 Numerical Analysis
- MA 451 Probability
- MA 507 Applicable Mathematics I
- MA 508 Applicable Mathematics II
- MA 518 Linear Algebra
- MA 555 Statistical Analysis I
- BLY540 Biochemistry
- BLY 474 Intro to Oceanography
- BLY 515 Ecotoxicology
- CH 514 Environmental Chemistry
- CSC 514 Modeling and Simulation
- CSC 515 Numerical Analysis
- GEO 442 Applied Remote Sensing
- GEO 461 Computer Mapping and GIS Technology
- GY 411 Soils
- GY 413 Coastal Geomorphology
- GY 575 Hydrology
- GY 576 Contaminant Hydrology
- MAS 571 Marine Hydrodynamics/Biomechanics
- MAS 572 Estuarine Hydrodynamics
- MGT 502 Organizational Behavior in Contemporary Organizations
- ST 540 Statistics in Research
- ST 550 Environmental Statistics

## Example Curriculum

### 1. Thesis Option:

Environmental Focus Area	Thesis Option		<b>Credit Hours</b>
<b>Semester</b>	<b>Course</b>		
<b>1</b>	CE 501 Introduction to the Coastal Design Environment (core)		3
	CE Course (choose one from the Environmental List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 1, total</b>		<b>9</b>
<b>2</b>	CE 502 Civil Engineering Design in the Coastal Environment (core)		3
	CE Course (choose one from the Environmental Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 2, total</b>		<b>9</b>
<b>3</b>	CE Course (choose one from the Environmental Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	CE 599 Thesis		3
	<b>Semester 3, total</b>		<b>9</b>
<b>4</b>	CE 599 Thesis		3
	EG 501 Professionalism, Research Integrity, and Seminar		1
	<b>Semester 4, total</b>		<b>4</b>
<b>Program Total</b>			<b>31</b>

Geotechnical Focus Area		Thesis Option		
<b>Semester</b>	<b>Course</b>			<b>Credit Hours</b>
<b>1</b>	CE 501 Introduction to the Coastal Design Environment (core)			3
	CE 540 Advanced Soil Mechanics			3
	Supporting Area Course (choose one from the Supporting Area Course List)			3
		<b>Semester 1, total</b>		<b>9</b>
<b>2</b>	CE 502 Civil Engineering Design in the Coastal Environment (core)			3
	CE Course (choose one from the Geotechnical Course List)			3
	Supporting Area Course (choose one from the Supporting Area Course List)			3
		<b>Semester 2, total</b>		<b>9</b>
<b>3</b>	CE Course (choose one from the Geotechnical Course List)			3
	Supporting Area Course (choose one from the Supporting Area Course List)			3
	EG 501 Professionalism, Research Integrity, and Seminar			1
		<b>Semester 3, total</b>		<b>7</b>
<b>4</b>	CE 599 Thesis			6
		<b>Semester 4, total</b>		<b>6</b>
		<b>Program Total</b>		<b>31</b>

Structural Focus Area	Thesis Option		<b>Credit Hours</b>
<b>Semester</b>	<b>Course</b>		
<b>1</b>	CE 501 Introduction to the Coastal Design Environment (core)		3
	CE Course (choose one from the Structural Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 1, total</b>		<b>9</b>
<b>2</b>	CE 502 Civil Engineering Design in the Coastal Environment (core)		3
	CE Course (choose one from the Structural Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 2, total</b>		<b>9</b>
<b>3</b>	CE Course (choose one from the Structural Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	EG 501 Professionalism, Research Integrity, and Seminar		1
	<b>Semester 3, total</b>		<b>7</b>
<b>4</b>	CE 599 Thesis		6
	<b>Semester 4, total</b>		<b>6</b>
	<b>Program Total</b>		<b>31</b>

Transportation Focus Area	Thesis Option		<b>Credit Hours</b>
<b>Semester</b>	<b>Course</b>		
<b>1</b>	CE 501 Introduction to the Coastal Design Environment (core)		3
	CE Course (choose one from the Transportation Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 1, total</b>		<b>9</b>
<b>2</b>	CE 502 Civil Engineering Design in the Coastal Environment (core)		3
	CE Course (choose one from the Transportation Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 2, total</b>		<b>9</b>
<b>3</b>	CE Course (choose one from the Transportation Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	EG 501 Professionalism, Research Integrity, and Seminar		1
	<b>Semester 3, total</b>		<b>7</b>
<b>4</b>	CE 599 Thesis		6
	<b>Semester 4, total</b>		<b>6</b>
	<b>Program Total</b>		<b>31</b>

Water  
Resources/  
Coastal  
Focus Area

Thesis Option

<b>Semester</b>	<b>Course</b>	<b>Credit Hours</b>
<b>1</b>	CE 501 Introduction to the Coastal Design Environment (core)	3
	CE Course (choose one from the WR/Coastal Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	<b>Semester 1, total</b>	<b>9</b>
<b>2</b>	CE 502 Civil Engineering Design in the Coastal Environment (core)	3
	CE Course (choose one from the WR/Coastal Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	<b>Semester 2, total</b>	<b>9</b>
<b>3</b>	CE Course (choose one from the WR/Coastal Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	EG 501 Professionalism, Research Integrity, and Seminar	1
	<b>Semester 3, total</b>	<b>7</b>
<b>4</b>	CE 599 Thesis	6
	<b>Semester 4, total</b>	<b>6</b>
	<b>Program Total</b>	<b>31</b>

## 2. Project Option:

Environmental Focus Area Project Option

<b>Semester</b>	<b>Course</b>	<b>Credit Hours</b>
<b>1</b>	CE 501 Introduction to the Coastal Design Environment (core)	3
	CE Course (choose one from the Environmental Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
<b>Semester 1, total</b>		<b>9</b>
<b>2</b>	CE 502 Civil Engineering Design in the Coastal Environment (core)	3
	CE Course (choose one from the Environmental Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
<b>Semester 2, total</b>		<b>9</b>
<b>3</b>	CE Course (choose one from the Environmental Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	EG 501 Professionalism, Research Integrity, and Seminar	1
<b>Semester 3, total</b>		<b>7</b>
<b>4</b>	CE Course (choose one from the Environmental Course List)	3
	CE or Supporting Course (choose one from CE or Supporting Area Course Lists)	3
	CE 599 Project	3
<b>Semester 4, total</b>		<b>9</b>
<b>Program Total</b>		<b>34</b>



Geotechnical Focus Area		Project Option		
<b>Semester</b>	<b>Course</b>			<b>Credit Hours</b>
<b>1</b>	CE 501 Introduction to the Coastal Design Environment (core)			3
	CE 540 Advanced Soil Mechanics			3
	Supporting Area Course (choose one from the Supporting Area Course List)			3
	<b>Semester 1, total</b>			<b>9</b>
<b>2</b>	CE 502 Civil Engineering Design in the Coastal Environment (core)			3
	CE Course (choose one from the Geotechnical Course List)			3
	Supporting Area Course (choose one from the Supporting Area Course List)			3
	<b>Semester 2, total</b>			<b>9</b>
<b>3</b>	CE Course (choose one from the Geotechnical Course List)			3
	Supporting Area Course (choose one from the Supporting Area Course List)			3
	EG 501 Professionalism, Research Integrity, and Seminar			1
	<b>Semester 3, total</b>			<b>7</b>
<b>4</b>	CE Course (choose one from the Geotechnical Course List)			3
	CE or Supporting Course (choose one from CE or Supporting Area Course Lists)			3
	CE 599 Project			3
	<b>Semester 4, total</b>			<b>9</b>
<b>Program Total</b>			<b>34</b>	

Structural Focus Area	Project Option		<b>Credit Hours</b>
<b>Semester</b>	<b>Course</b>		
<b>1</b>	CE 501 Introduction to the Coastal Design Environment (core)		3
	CE Course (choose one from the Structural Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 1, total</b>		<b>9</b>
<b>2</b>	CE 502 Civil Engineering Design in the Coastal Environment (core)		3
	CE Course (choose one from the Structural Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 2, total</b>		<b>9</b>
<b>3</b>	CE Course (choose one from the Structural Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	EG 501 Professionalism, Research Integrity, and Seminar		1
	<b>Semester 3, total</b>		<b>7</b>
<b>4</b>	CE Course (choose one from the Structural Course List)		3
	CE or Supporting Course (choose one from CE or Supporting Area Course Lists)		3
	CE 599 Project		3
	<b>Semester 4, total</b>		<b>9</b>
<b>Program Total</b>			<b>34</b>

Transportation  
Focus Area

Project Option

<b>Semester</b>	<b>Course</b>	<b>Credit Hours</b>
<b>1</b>	CE 501 Introduction to the Coastal Design Environment (core)	3
	CE Course (choose one from the Transportation Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	<b>Semester 1, total</b>	<b>9</b>
<b>2</b>	CE 502 Civil Engineering Design in the Coastal Environment (core)	3
	CE Course (choose one from the Transportation Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	<b>Semester 2, total</b>	<b>9</b>
<b>3</b>	CE Course (choose one from the Transportation Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	EG 501 Professionalism, Research Integrity, and Seminar	1
	<b>Semester 3, total</b>	<b>7</b>
<b>4</b>	CE Course (choose one from the Transportation Course List)	3
	CE or Supporting Course (choose one from CE or Supporting Area Course Lists)	3
	CE 599 Project	3
	<b>Semester 4, total</b>	<b>9</b>
<b>Program Total</b>		<b>34</b>

Water  
Resources/  
Coastal  
Focus Area  
**Semester**

Project Option

**Course**

**Credit  
Hours**

<b>1</b>	CE 501 Introduction to the Coastal Design Environment (core)	3
	CE Course (choose one from the WR/Coastal Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	<b>Semester 1, total</b>	<b>9</b>
<b>2</b>	CE 502 Civil Engineering Design in the Coastal Environment (core)	3
	CE Course (choose one from the WR/Coastal Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	<b>Semester 2, total</b>	<b>9</b>
<b>3</b>	CE Course (choose one from the WR/Coastal Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	EG 501 Professionalism, Research Integrity, and Seminar	1
	<b>Semester 3, total</b>	<b>7</b>
<b>4</b>	CE Course (choose one from the WR/Coastal Course List)	3
	CE or Supporting Course (choose one from CE or Supporting Area Course Lists)	3
	CE 599 Project	3
	<b>Semester 4, total</b>	<b>9</b>
<b>Program Total</b>		<b>34</b>

### 3. Coursework Option:

Environmental Focus Area	Coursework Option		<b>Credit Hours</b>
<b>Semester</b>	<b>Course</b>		
<b>1</b>	CE 501 Introduction to the Coastal Design Environment (core)		3
	CE Course (choose one from the Environmental Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 1, total</b>		<b>9</b>
<b>2</b>	CE 502 Civil Engineering Design in the Coastal Environment (core)		3
	CE Course (choose one from the Environmental Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 2, total</b>		<b>9</b>
<b>3</b>	CE Course (choose one from the Environmental Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 3, total</b>		<b>6</b>
<b>4</b>	CE Course (choose one from the Environmental Course List)		3
	CE or Supporting Course (choose one from CE or Supporting Area Course Lists)		3
	<b>Semester 4, total</b>		<b>6</b>
<b>5</b>	CE or Supporting Course (choose one from CE or Supporting Area Course Lists)		3
	<b>Semester 5, total</b>		<b>3</b>
<b>Program Total</b>			<b>33</b>

Geotechnical Focus Area Coursework Option			
<b>Semester</b>	<b>Course</b>		<b>Credit Hours</b>
<b>1</b>	CE 501 Introduction to the Coastal Design Environment (core)		3
	CE 540 Advanced Soil Mechanics		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 1, total</b>		<b>9</b>
<b>2</b>	CE 502 Civil Engineering Design in the Coastal Environment (core)		3
	CE Course (choose one from the Geotechnical Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 2, total</b>		<b>9</b>
<b>3</b>	CE Course (choose one from the Geotechnical Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 3, total</b>		<b>6</b>
<b>4</b>	CE Course (choose one from the Geotechnical Course List)		3
	CE or Supporting Course (choose one from CE or Supporting Area Course Lists)		3
	<b>Semester 4, total</b>		<b>6</b>
<b>5</b>	CE or Supporting Course (choose one from CE or Supporting Area Course Lists)		3
	<b>Semester 5, total</b>		<b>3</b>
<b>Program Total</b>			<b>33</b>

Structural Focus Area	Coursework Option		<b>Credit Hours</b>
<b>Semester</b>	<b>Course</b>		
<b>1</b>	CE 501 Introduction to the Coastal Design Environment (core)		3
	CE Course (choose one from the Structural Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 1, total</b>		<b>9</b>
<b>2</b>	CE 502 Civil Engineering Design in the Coastal Environment (core)		3
	CE Course (choose one from the Structural Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 2, total</b>		<b>9</b>
<b>3</b>	CE Course (choose one from the Structural Course List)		3
	Supporting Area Course (choose one from the Supporting Area Course List)		3
	<b>Semester 3, total</b>		<b>6</b>
<b>4</b>	CE Course (choose one from the Structural Course List)		3
	CE or Supporting Course (choose one from CE or Supporting Area Course Lists)		3
	<b>Semester 4, total</b>		<b>6</b>
<b>5</b>	CE or Supporting Course (choose one from CE or Supporting Area Course Lists)		3
	<b>Semester 5, total</b>		<b>3</b>
<b>Program Total</b>			<b>33</b>

Transportation  
Focus Area

Coursework Option

<b>Semester</b>	<b>Course</b>	<b>Credit Hours</b>
<b>1</b>	CE 501 Introduction to the Coastal Design Environment (core)	3
	CE Course (choose one from the Transportation Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	<b>Semester 1, total</b>	<b>9</b>
<b>2</b>	CE 502 Civil Engineering Design in the Coastal Environment (core)	3
	CE Course (choose one from the Transportation Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	<b>Semester 2, total</b>	<b>9</b>
<b>3</b>	CE Course (choose one from the Transportation Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	<b>Semester 3, total</b>	<b>6</b>
<b>4</b>	CE Course (choose one from the Transportation Course List)	3
	CE or Supporting Course (choose one from CE or Supporting Area Course Lists)	3
	<b>Semester 4, total</b>	<b>6</b>
<b>5</b>	CE or Supporting Course (choose one from CE or Supporting Area Course Lists)	3
	<b>Semester 5, total</b>	<b>3</b>
<b>Program Total</b>		<b>33</b>



Water  
Resources/  
Coastal  
Focus Area

Coursework Option

<b>Semester</b>	<b>Course</b>	<b>Credit Hours</b>
<b>1</b>	CE 501 Introduction to the Coastal Design Environment (core)	3
	CE Course (choose one from the WR/Coastal Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	<b>Semester 1, total</b>	<b>9</b>
<b>2</b>	CE 502 Civil Engineering Design in the Coastal Environment (core)	3
	CE Course (choose one from the WR/Coastal Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	<b>Semester 2, total</b>	<b>9</b>
<b>3</b>	CE Course (choose one from the WR/Coastal Course List)	3
	Supporting Area Course (choose one from the Supporting Area Course List)	3
	<b>Semester 3, total</b>	<b>6</b>
<b>4</b>	CE Course (choose one from the WR/Coastal Course List)	3
	CE or Supporting Course (choose one from CE or Supporting Area Course Lists)	3
	<b>Semester 4, total</b>	<b>6</b>
<b>5</b>	CE or Supporting Course (choose one from CE or Supporting Area Course Lists)	3
	<b>Semester 5, total</b>	<b>3</b>
<b>Program Total</b>		<b>33</b>