

### ***Master of Science in Civil Engineering (MSCE)***

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

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 Engineering. Students without an engineering BS are required to complete undergraduate engineering pre-requisite courses.

#### **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.

#### **Thesis Requirements (6 hours)**

The Department supports MSCE concentration areas in Geotechnical Engineering (GTL), Interdisciplinary Transportation (ITP), 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 program and thesis requirements.

**Master's thesis committees** consist of the major professor in the department and at least two other members or co-major professors and at least one other member of the department or area of interest in which the degree is sought. Thesis committee members must be members of the graduate faculty or be approved by the department, college and graduate school to serve on the committee.

**MASTER OF SCIENCE CIVIL ENGINEERING (MSCE) WITH A CONCENTRATION IN  
GEOTECHNICAL ENGINEERING (GTL)**  
*Curriculum Program of Study Form*

|                                                              |  |                 |  |
|--------------------------------------------------------------|--|-----------------|--|
| <b>Name:</b>                                                 |  | <b>USF ID #</b> |  |
| <b>Term/Year<br/>Admitted to<br/>Program:</b>                |  |                 |  |
| <b>Address:</b>                                              |  |                 |  |
| <b>Phone:</b>                                                |  |                 |  |
| <b>Email:</b>                                                |  |                 |  |
| <b>Advisor:</b>                                              |  |                 |  |
| <b>Area of concentration: Geotechnical Engineering (GTL)</b> |  |                 |  |

**30 Total Credits of Coursework:**

| Course Title                                                                | Number   | Credits | Semester                           | Outside<br>CEE? |
|-----------------------------------------------------------------------------|----------|---------|------------------------------------|-----------------|
| <b>Required Core Courses:</b>                                               |          |         |                                    |                 |
| Foundation Engineering                                                      | CEG 5115 | 3       |                                    |                 |
| Applied Finite Element Method                                               | CES 6118 | 3       |                                    |                 |
| <b>6 additional credits of coursework in Geotechnical or related areas:</b> |          |         |                                    |                 |
|                                                                             |          | 3       |                                    |                 |
|                                                                             |          | 3       |                                    |                 |
| <b>12 credits of electives:</b>                                             |          |         |                                    |                 |
|                                                                             |          |         |                                    |                 |
|                                                                             |          |         |                                    |                 |
|                                                                             |          |         |                                    |                 |
|                                                                             |          |         |                                    |                 |
| <b>Thesis (minimum 6 credits required):</b>                                 |          |         |                                    |                 |
| Thesis: Masters                                                             | CGN 6971 |         |                                    |                 |
|                                                                             |          |         |                                    |                 |
|                                                                             |          |         |                                    |                 |
|                                                                             |          |         | Total Credits Outside CEE          |                 |
|                                                                             |          |         | Total Credits at 4000 Level        |                 |
|                                                                             |          |         | Total Credits Independent Study    |                 |
|                                                                             |          |         | <b>Total Credits (30 required)</b> |                 |

- $\leq 3$  courses outside CEE
- $\leq 6$  credits of 4000 level
- $\leq 6$  credits independent study
- 6 credits of thesis

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Graduate Program Coordinator: Signature and Date

**MASTER OF SCIENCE CIVIL ENGINEERING (MSCE) WITH A CONCENTRATION IN  
MATERIALS ENGINEERING (MTL)**  
*Curriculum Program of Study Form*

|                                                                         |  |                 |  |
|-------------------------------------------------------------------------|--|-----------------|--|
| <b>Name:</b>                                                            |  | <b>USF ID #</b> |  |
| <b>Term/Year<br/>Admitted into<br/>Program:</b>                         |  |                 |  |
| <b>Address:</b>                                                         |  |                 |  |
| <b>Phone:</b>                                                           |  |                 |  |
| <b>Email:</b>                                                           |  |                 |  |
| <b>Advisor:</b>                                                         |  |                 |  |
| <b>Area of concentration: Materials Engineering &amp; Science (MTL)</b> |  |                 |  |

**30 Total Credits of Coursework:**

| Course Title                                                           | Number   | Credits | Semester                           | Outside CEE? |
|------------------------------------------------------------------------|----------|---------|------------------------------------|--------------|
| <b>At least two of the following:</b>                                  |          |         |                                    |              |
| Concrete Construction Materials                                        | CGN 6933 | 3       |                                    |              |
| Electrochemical Diagnostic Techniques                                  | CGN 6720 | 3       |                                    |              |
| Structural Life Prediction                                             | CGN 6933 | 3       |                                    |              |
| Corrosion of Materials                                                 | CGN 6933 | 3       |                                    |              |
| Characterization of Materials                                          | ECH 6931 | 3       |                                    |              |
| <b>9 Additional credits in Materials Engineering or related areas:</b> |          |         |                                    |              |
|                                                                        |          | 3       |                                    |              |
|                                                                        |          | 3       |                                    |              |
|                                                                        |          | 3       |                                    |              |
| <b>9 credits of electives:</b>                                         |          |         |                                    |              |
|                                                                        |          | 3       |                                    |              |
|                                                                        |          | 3       |                                    |              |
|                                                                        |          | 3       |                                    |              |
| <b>Thesis (minimum 6 credits required):</b>                            |          |         |                                    |              |
| Thesis: Masters                                                        | CGN 6971 |         |                                    |              |
|                                                                        |          |         |                                    |              |
|                                                                        |          |         |                                    |              |
|                                                                        |          |         | Total Credits Outside CEE          |              |
|                                                                        |          |         | Total Credits at 4000 Level        |              |
|                                                                        |          |         | Total Credits Independent Study    |              |
|                                                                        |          |         | <b>Total Credits (30 required)</b> |              |

- ≤ 3 courses outside CEE
- ≤ 6 credits of 4000 level
- ≤ 6 credits independent study
- 6 credits of thesis

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Graduate Program Coordinator: Signature and Date

# **MASTER OF SCIENCE CIVIL ENGINEERING (MSCE) WITH A CONCENTRATION IN STRUCTURAL ENGINEERING (STR)**

## *Curriculum Program of Study Form*

|                                                            |  |                 |  |
|------------------------------------------------------------|--|-----------------|--|
| <b>Name:</b>                                               |  | <b>USF ID #</b> |  |
| <b>Term/Year<br/>Admitted into<br/>Program:</b>            |  |                 |  |
| <b>Address:</b>                                            |  |                 |  |
| <b>Phone:</b>                                              |  |                 |  |
| <b>Email:</b>                                              |  |                 |  |
| <b>Advisor:</b>                                            |  |                 |  |
| <b>Area of concentration: Structural Engineering (STR)</b> |  |                 |  |

**30 Total Credits of Coursework:**

| Course Title                                                                                                                                                                     | Number    | Credits                            | Semester | Outside<br>CEE? |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------------------|----------|-----------------|
| <b>At least one of the following (design course):</b>                                                                                                                            |           |                                    |          |                 |
| Advanced Concrete Design                                                                                                                                                         | CES 6706  | 3                                  |          |                 |
| Design of Masonry Structures                                                                                                                                                     | CES 6835  | 3                                  |          |                 |
| Prestressed Concrete                                                                                                                                                             | CES 5715C | 3                                  |          |                 |
| <b>At least one of the following (analysis course):</b>                                                                                                                          |           |                                    |          |                 |
| Applied Finite Elements                                                                                                                                                          | CES 6118  | 3                                  |          |                 |
| Applied Elasticity                                                                                                                                                               | EML 6653  | 3                                  |          |                 |
| Advanced Mechanics of Materials                                                                                                                                                  | CES 5105C | 3                                  |          |                 |
| Nonlinear Analysis                                                                                                                                                               | MAP 5316  | 3                                  |          |                 |
| <b>9 additional credits of coursework in Structural Engineering or related areas:</b>                                                                                            |           |                                    |          |                 |
|                                                                                                                                                                                  |           |                                    |          |                 |
|                                                                                                                                                                                  |           |                                    |          |                 |
|                                                                                                                                                                                  |           |                                    |          |                 |
| <b>12 credits of electives:</b>                                                                                                                                                  |           |                                    |          |                 |
|                                                                                                                                                                                  |           | 3                                  |          |                 |
|                                                                                                                                                                                  |           | 3                                  |          |                 |
|                                                                                                                                                                                  |           | 3                                  |          |                 |
|                                                                                                                                                                                  |           | 3                                  |          |                 |
| <b>Thesis (minimum 6 credits required):</b>                                                                                                                                      |           |                                    |          |                 |
| Thesis: Masters                                                                                                                                                                  | CGN 6971  |                                    |          |                 |
|                                                                                                                                                                                  |           |                                    |          |                 |
|                                                                                                                                                                                  |           |                                    |          |                 |
| <ul style="list-style-type: none"> <li>≤ 3 courses outside CEE</li> <li>≤ 6 credits of 4000 level</li> <li>≤ 6 credits independent study</li> <li>6 credits of thesis</li> </ul> |           | Total Credits Outside CEE          |          |                 |
|                                                                                                                                                                                  |           | Total Credits at 4000 Level        |          |                 |
|                                                                                                                                                                                  |           | Total Credits Independent Study    |          |                 |
|                                                                                                                                                                                  |           | <b>Total Credits (30 required)</b> |          |                 |

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Graduate Program Coordinator: Signature and Date

## TRANSPORTATION ENGINEERING (TPT)

## Curriculum Program of Study Form

**Area of concentration: Transportation Engineering (TPT)**

### 30 Total Credits of Coursework:

- $\leq 3$  courses outside CEE
- $\leq 6$  credits of 4000 level
- $\leq 6$  credits independent study
- 6 credits of thesis

Graduate Program Coordinator: Signature and Date

**MASTER OF SCIENCE CIVIL ENGINEERING (MSCE) WITH A CONCENTRATION IN  
WATER RESOURCES ENGINEERING (WRS)**  
*Curriculum Program of Study Form*

|                                                                 |  |                 |  |
|-----------------------------------------------------------------|--|-----------------|--|
| <b>Name:</b>                                                    |  | <b>USF ID #</b> |  |
| <b>Term/Year<br/>Admitted into<br/>Program:</b>                 |  |                 |  |
| <b>Address:</b>                                                 |  |                 |  |
| <b>Phone:</b>                                                   |  |                 |  |
| <b>Email:</b>                                                   |  |                 |  |
| <b>Advisor:</b>                                                 |  |                 |  |
| <b>Area of concentration: Water Resources Engineering (WRS)</b> |  |                 |  |

**30 Total Credits of Coursework:**

| Course Title                                                                               | Number    | Credits | Semester                           | Outside<br>CEE? |
|--------------------------------------------------------------------------------------------|-----------|---------|------------------------------------|-----------------|
| <b>A minimum of 4 courses (12 credits) from the following:</b>                             |           |         |                                    |                 |
| Free Surface Flow                                                                          | CWR 6235  | 3       |                                    |                 |
| Waves and Beach Protection                                                                 | CWR 6239  | 3       |                                    |                 |
| Urban Hydrology                                                                            | CWR 6305  | 3       |                                    |                 |
| Coastal and Estuary Modeling                                                               | CWR 6534  | 3       |                                    |                 |
| Hydrologic Models                                                                          | CWR 6535  | 3       |                                    |                 |
| Vadose Zone Hydraulics                                                                     | CWR 6933  | 3       |                                    |                 |
| Groundwater Hydraulics                                                                     | CGN 6933  | 3       |                                    |                 |
| Advanced Computational Fluid<br>Mechanics                                                  | GLY 6836  | 3       |                                    |                 |
| Numerical Modeling of Hydrogeologic<br>Systems                                             | GLY 6836  | 3       |                                    |                 |
| Advanced Hydrogeology                                                                      | GLY 6827C | 3       |                                    |                 |
| <b>3 additional credits of coursework in Water Resources Engineering or related areas:</b> |           |         |                                    |                 |
|                                                                                            |           | 3       |                                    |                 |
| <b>9 credits of electives:</b>                                                             |           |         |                                    |                 |
|                                                                                            |           |         |                                    |                 |
|                                                                                            |           |         |                                    |                 |
|                                                                                            |           |         |                                    |                 |
| <b>Thesis (minimum 6 credits required):</b>                                                |           |         |                                    |                 |
| Thesis: Masters                                                                            | CGN       | 6971    |                                    |                 |
|                                                                                            |           |         |                                    |                 |
|                                                                                            |           |         |                                    |                 |
|                                                                                            |           |         | Total Credits Outside CEE          |                 |
|                                                                                            |           |         | Total Credits at 4000 Level        |                 |
|                                                                                            |           |         | Total Credits Independent Study    |                 |
|                                                                                            |           |         | <b>Total Credits (30 required)</b> |                 |

- ≤ 3 courses outside CEE
- ≤ 6 credits of 4000 level
- ≤ 6 credits independent study
- 6 credits of thesis

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Graduate Program Coordinator: Signature and Date