

CIVIL ENGINEERING, M.E.

Degree Requirements (30 Hours)

For the M.E. degree, a minimum of 30 credit hours is required. Students may take either 30 credit hours of course work or 24 hours of course work and 6 hours of ECIV 797 (as a master of engineering project). At least 18 hours of course work must be 700-level or higher. Up to 12 credit hours of course work may be taken outside of the department for degree credit with the approval of the student's advisor and the graduate director. Prescribed core courses are required for each area of study (see "Core Courses" below).

Prior to graduation, each M.E. candidate must pass a comprehensive assessment based on program learning objectives by demonstrating the ability to integrate graduate level coursework into engineering practice in one of two ways:

1. a written career planning document; or
2. a written summary of the engineering project performed as part of ECIV 797.

Students should consult the graduate director for additional information.

Core Courses

Each area of study has a minimum core requirement for the M.S., M.E., and Ph.D. degrees. The core requirements in the different areas of study are as follows:

Environmental Engineering

| Course | Title | Credits |
|------------------------------|---|----------|
| ECIV 750 | Principles of Environmental Engineering Process | 3 |
| Select two of the following: | | 6 |
| ECIV 555 | Principles of Municipal Solid Waste Engineering | |
| ECIV 556 | Air Pollution Control Engineering | |
| ECIV 558 | Environmental Engineering Process Modeling | |
| ECIV 751 | Water and Wastewater Treatment Theory I | |
| ECIV 752 | Water and Wastewater Treatment Theory II | |
| ECIV 753 | Unit Operations Laboratory for Water and Wastewater Treatment | |
| ECIV 755 | Industrial Wastewater Treatment | |
| Total Credit Hours | | 9 |

Geotechnical Engineering

| Course | Title | Credits |
|--------------------------------|---|-----------|
| ECIV 730 | Advanced Soil Mechanics | 3 |
| Select three of the following: | | 9 |
| ECIV 731 | Slope Stability, Retaining Systems and Lateral Earth Pressure | |
| ECIV 732 | Theoretical and Numerical Methods in Geomechanics | |
| ECIV 733 | Physico-chemical Properties of Soils | |
| ECIV 734 | Dynamics of Soils and Foundations | |
| ECIV 736 | Ground Improvement Techniques | |
| ECIV 737 | Advanced Foundation Design | |
| Total Credit Hours | | 12 |

Structural Engineering

| Course | Title | Credits |
|--------------------------------|---|-----------|
| ECIV 720 | Advanced Structural Mechanics and Analysis | 3 |
| Select three of the following: | | 9 |
| ECIV 722 | Theory and Design of Plates and Shells | |
| ECIV 724 | Dynamics of Structures | |
| ECIV 725 | Advanced Analysis and Design in Structural Metals | |
| ECIV 726 | Repair and Retrofit of Structures | |
| ECIV 727 | Advanced Analysis and Design of Reinforced Concrete | |
| ECIV 728 | Prestressed Concrete Analysis and Design | |
| ECIV 737 | Advanced Foundation Design | |
| Total Credit Hours | | 12 |

Transportation Engineering

| Course | Title | Credits |
|-----------------------------|---|----------|
| Select one from each group: | | 9 |
| Group One | | |
| ECIV 535 | Geotechnical Engineering in Transportation | |
| ECIV 540 | Transportation Systems Planning | |
| ECIV 541 | Highway Design | |
| Group Two | | |
| ECIV 542 | Traffic Engineering | |
| ECIV 748 | Traffic Flow Theory | |
| Group Three | | |
| ECIV 705 | Deterministic Civil and Environmental Systems Engineering | |
| ECIV 706 | Probabilistic Civil and Environmental Systems Engineering | |
| Total Credit Hours | | 9 |

Water Resources Engineering

| Course | Title | Credits |
|--------------------------------------|---|---------|
| Select one of the following options: | | 9 |
| Option One | | |
| Select two of the following: | | |
| ECIV 760 | Computational Hydraulics | |
| ECIV 761 | Numerical Methods in Subsurface Hydrology | |
| ECIV 762 | Advanced Hydrology | |
| ECIV 763 | Unsaturated Flow Theory | |
| ECIV 764 | Contaminant Transport | |
| ECIV 765 | Erosion and Sediment Control | |
| ECIV 766 | Fluid Transients | |
| ECIV 767 | Sediment Transport and River Mechanics | |
| Select one of the following: | | |
| ECIV 560 | Open Channel Hydraulics | |
| ECIV 562 | Engineering Hydrology | |
| ECIV 563 | Subsurface Hydrology | |
| Option Two | | |
| Select three of the following: | | |
| ECIV 760 | Computational Hydraulics | |
| ECIV 761 | Numerical Methods in Subsurface Hydrology | |
| ECIV 762 | Advanced Hydrology | |
| ECIV 763 | Unsaturated Flow Theory | |

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|---------------------------|--|
| ECIV 764 | Contaminant Transport |
| ECIV 765 | Erosion and Sediment Control |
| ECIV 766 | Fluid Transients |
| ECIV 767 | Sediment Transport and River Mechanics |
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| Total Credit Hours | 9 |