

# CIVIL ENGINEERING - MASTER OF ENGINEERING IN CIVIL ENGINEERING

The Master of Engineering degree in Civil Engineering (M.E. in CE) is a coursework only degree and several courses are offered online. The M.E. in CE degree requires a total of 30-31 credit hours consisting of one general elective course (3 credit hours); seven technical electives in Civil, Environmental, and/or Agricultural Engineering (21-22 credit hours); and two electives from engineering disciplines outside the department and/or other areas of interest outside the college (6 credit hours).

| Prefix  | Title  | Credits      |
|---|--|--------------|
| <b>General elective course</b>  |  | <b>3</b>     |
| C E 490   | Introduction to Artificial Intelligence for Civil Engineers <sup>1</sup> |              |
| C E 510   | Introduction to Nondestructive Testing <sup>1</sup>                      |              |
| C E 514   | Numerical Methods in Civil Engineering <sup>1</sup>                      |              |
| C E 535   | Technical Communication for Engineers <sup>1</sup>                       |              |
| <b>CE, ENVE, and A EN elective courses<sup>2</sup></b>  |  | <b>21-22</b> |
| Seven courses to be selected from the following list of courses (numbered 450-599) <sup>3</sup> |  |              |
| <i>Environmental Engineering</i>  |  |              |
| ENVE 456  | Environmental Engineering Design   |              |
| ENVE 459  | Environmental Microbiology <sup>1</sup>                                  |              |
| ENVE 487  | Air Pollution Control Systems Design <sup>1</sup>                        |              |
| ENVE 550  | Aquatic Chemistry <sup>1</sup>   |              |
| ENVE 551  | Unit Processes/Operation of Water Treatment <sup>1</sup>                 |              |
| ENVE 552  | Unit Processes/Operation of Wastewater Treatment <sup>1</sup>            |              |
| ENVE 557  | Surface Water Quality Modeling <sup>1</sup>                              |              |
| <i>Geotechnical Engineering</i>   |  |              |
| C E 457   | Foundation Design  |              |
| C E 460   | Site Investigation   |              |
| C E 470   | Design of Municipal and Hazardous Waste Landfills                        |              |
| C E 479   | Pavement Analysis and Design <sup>1</sup>                                |              |
| C E 485   | Design of Earth Dams   |              |
| C E 507   | Design of Earth Retaining Structures <sup>1</sup>                        |              |
| C E 508   | Advanced Soil Behavior   |              |
| C E 509   | Deep Foundations <sup>1</sup>  |              |
| C E 579   | Ground Improvement <sup>1</sup>  |              |
| C E 585   | Slope Stability Analysis and Design                                      |              |
| <i>Structural Engineering</i>   |  |              |
| C E 469   | Structural Systems   |              |
| C E 501   | Advanced Mechanics of Materials <sup>1</sup>                             |              |
| C E 502   | Advanced Mechanics of Steel Structures <sup>1</sup>                      |              |
| C E 515   | Finite Element Methods <sup>1</sup>                                      |              |
| C E 544   | Advanced Design of Steel Structures <sup>1</sup>                         |              |
| C E 545   | Advanced Concrete Design <sup>1</sup>                                    |              |
| C E 554   | Wood Design <sup>1</sup>   |              |
| C E 555   | Masonry Design   |              |
| C E 547   | Bridge Engineering   |              |
| C E 571   | Structural Dynamics <sup>1</sup>   |              |
| <i>Water Resources and Agricultural Engineering</i>   |  |              |
| C E 452   | Geohydrology <sup>1</sup>  |              |

|   |  |              |
|---|--|--------------|
| C E 482   | Hydraulic Structures   |              |
| C E 483   | Surface Water Hydrology  |              |
| C E 531   | Open Channel Hydraulics  |              |
| C E 557   | Water Resources Development <sup>1</sup>                       |              |
| C E 581   | Ground Water Hydrology <sup>1</sup>                            |              |
| C E 582   | Statistical Hydrology  |              |
| A EN 459  | Groundwater, Wells & Pumps                                     |              |
| A EN 478  | Irrigation and Drainage Engineering                            |              |
| <i>Transportation and Construction</i>  |  |              |
| C E 471   | Transportation Engineering <sup>1</sup>                        |              |
| C E 477   | Engineering Economics and Construction Management <sup>1</sup> |              |
| <b>MECE elective courses<sup>4</sup></b>  |  | <b>6</b>     |
| Two courses to be selected from the following list of courses (numbered 450-599) <sup>3</sup> |  |              |
| <i>Chemical and Materials Engineering</i>   |  |              |
| CHME 479  | Corrosion and Degradation of Materials                         |              |
| CHME 567  | Nanoscience and Nanotechnology <sup>1</sup>                    |              |
| <i>Engineering Technology</i>   |  |              |
| E T 455   | Cost Estimating and Scheduling                                 |              |
| E T 472   | Intelligent Transportation Systems (ITS) <sup>1</sup>          |              |
| E T 480   | Innovation and Product Development                             |              |
| SUR 451   | Spatial Data Adjustment II                                     |              |
| SUR 452   | Surveying Practicum  |              |
| SUR 461   | GNSS Positioning   |              |
| SUR 464   | Legal Principles and Boundary Law II                           |              |
| SUR 485   | Emerging Techniques in Geospatial Technologies                 |              |
| <i>Industrial Engineering</i>   |  |              |
| I E 459   | Systems Thinking and Decision Making <sup>1</sup>              |              |
| I E 515   | Stochastic Processes Modeling <sup>1</sup>                     |              |
| I E 523   | Advanced Engineering Economy <sup>1</sup>                      |              |
| I E 533   | Linear Programming <sup>1</sup>                                |              |
| I E 534   | Nonlinear Programming <sup>1</sup>                             |              |
| I E 535   | Discrete Optimization <sup>1</sup>                             |              |
| I E 537   | Large Scale Systems Engineering <sup>1</sup>                   |              |
| I E 561   | Advanced Safety Engineering <sup>1</sup>                       |              |
| I E 563   | Topics in Engineering Administration <sup>1</sup>              |              |
| <i>Mechanical Engineering</i>   |  |              |
| M E 456   | Experimental Modal Analysis                                    |              |
| M E 502   | Elasticity I <sup>1</sup>                                      |              |
| M E 504   | Continuum Mechanics <sup>1</sup>                               |              |
| M E 530   | Intermediate Fluid Mechanics                                   |              |
| M E 533   | Numerical Methods for Fluid Mechanics and Heat Transfer        |              |
| M E 557   | Engineering Failure Analysis <sup>1</sup>                      |              |
| M E 570   | Engineering Analysis I <sup>1</sup>                            |              |
| <b>Total Credits</b>  |  | <b>30-31</b> |

<sup>1</sup> Course offered online in the Fall, Spring, or Summer semester

<sup>2</sup> Electives should be chosen from at least 2 different areas (e.g., geotechnical and structural, environmental and water resources/agricultural)

<sup>3</sup> Up to 12 credit hours of undergraduate courses numbered 450-499 may be applied towards the M.E. in CE degree (excess of this limit requires approval of department head)

<sup>4</sup> Courses listed represent only a partial list of engineering electives that may be taken outside the department; courses in other areas of

interest outside the college may be taken including, but not limited to, environmental science, mathematics, statistics, geography, soil science, geology, business, economics, and management (all M.E. in CE electives must be approved by graduate advisor and department head)