

# MASTER OF SCIENCE IN CIVIL ENGINEERING

Four technical areas (construction, geotechnical, structural, and transportation engineering) are included in the Master of Science in Civil Engineering program. Degree candidates in the master of science program must complete a minimum of 32 credit hours, six to eight of which are for research and thesis. Up to 12 credit hours of 400-level undergraduate coursework (except CAE 431 and CAE 432) may be included in the M.S. program with prior adviser approval. An oral defense of the thesis constitutes the comprehensive examination, and no additional written comprehensive examination is required.

## Curriculum

### Construction Engineering and Management Emphasis

Code	Title	Credit Hours
<b>Required Courses</b>		(12)
CAE 570	Legal Issues in Civil Engrg	3
CAE 571	Lean Construction and Control	3
CAE 574	Economic Decision Analysis	3
CAE 577	Constuction Equip Management	3
<b>Elective Courses</b>		(12-14)
Select 12-14 credit hours		12-14
<b>Thesis Research</b>		(6-8)
CAE 591	Research and Thesis M.S.	6-8

**Minimum degree credits required: 32**

### Geotechnical Engineering Emphasis

Code	Title	Credit Hours
<b>Required Courses</b>		(16)
CAE 562	Engineering Behavior of Soils	4
CAE 564	Foundations/Embankments/Earth	4
CAE 565	Rock Mechanics and Tunneling	4
CAE 566	Earthquake Engg/Soil Dynamics	4
<b>Elective Courses</b>		(8-10)
Select 8-10 credit hours		8-10
<b>Thesis Research</b>		(6-8)
CAE 591	Research and Thesis M.S.	6-8

**Minimum degree credits required: 32**

### Structural Engineering Emphasis

Code	Title	Credit Hours
<b>Required Courses</b>		(13)
MMAE 501	Engineering Analysis I	3
or CAE 514	Math Methods for Struct Engrng	
CAE 503	Advanced Structural Analysis	3
CAE 518	Advanced Reinforced Concrete	3
CAE 525	Advd Steel&Composite Structure	4
<b>Elective Courses</b>		(11-13)
Select 11-13 credit hours		11-13
<b>Thesis Research</b>		(6-8)
CAE 591	Research and Thesis M.S.	6-8

**Minimum degree credits required: 32**

**Transportation Engineering Emphasis**

<b>Code</b>	<b>Title</b>	<b>Credit Hours</b>
<b>Required Courses</b>		<b>(12-13)</b>
Select a minimum of four courses from the following (with adviser consent):		12-13
CAE 523	Statistical Analysis Engg Data	3
CAE 543	Demand Models for Urban Trans	3
CAE 544	Urban Transportation Planning	4
CAE 546	Public Transportation Systems	3
CAE 548	Transportation Systems Mgmt	3
CAE 555	Transportation Sysys Evaluatio	3
CAE 575	Systems Analysis in Civil Engg	3
MATH 525	Statistical Models and Methods	3
<b>Thesis Research</b>		<b>(6-8)</b>
CAE 591	Research and Thesis M.S.	6-8
<b>Elective Courses</b>		<b>(12-14)</b>
Select 12-14 credit hours from the following: <sup>1</sup>		12-14
CAE 419	Intro Transportation Engg/Dsgn	3
CAE 540	Asphalt Concrete Mix Design	3
CAE 541	Pavement Evaluation&Management	3
CAE 545	Traffic Operations & Flow Thry	3
CAE 547	Advanced Traffic Engineering	3
CAE 549	Transportation Econ, Dev&Plcy	3
CAE 568	Transportation Asset Mgmt	3
CAE 574	Economic Decision Analysis	3
CAE 580	Intelligent Transport Systems	3
CAE 581	Algorithms in Transportation	3
MATH 522	Mathematical Modeling	3
MATH 542	Stochastic Processes	3
MATH 563	Mathematical Statistics	3
MATH 564	Applied Statistics	3
MATH 565	Monte Carlo Methods in Fin	3
MATH 571	Data Preparation and Analysis	3
MATH 574	Bayesian Computational Stats	3

**Minimum degree credits required: 32**

<sup>1</sup> Other courses are allowed but are subject to adviser approval.