

**Required Course Work as Partial Fulfillment of the MEng Degree Option
with a Concentration in Structural Engineering (*Online Option Available)**

	Course Number and Title	Credits	Grade	Semester
Articulation Courses (if required)				
Group 1. Core Courses (6 credit hours)	CES 5105 Advanced Mechanics of Materials*			
	CES 5106 Advanced Structural Analysis*			
Group 2. Structural Design Courses (9 credit hours)				
Group 3. Other Elective Courses (12 credit hours)				
Group 4. Math, Statistics, or Computation (3 credit hours)				
Total Credit Hours				

Articulation, Transfer, and Out-of-Department Courses: Students with Structural Engineering concentration who have not taken Steel Design and Concrete Design must take these courses as articulation courses. Additional articulation courses may be required if the student’s undergraduate major is not civil engineering. Per university requirements, up to 6 credit hours of courses not counted toward a previous degree may be transferred from another regionally-accredited graduate school (or comparable international institution). Out-of-department courses are limited to 9 credit hours total.

Group 1: The student must take all Group 1 courses. Group 1 courses will be offered once in three semesters.

- CES 5105 Advanced Mechanics of Materials*
- CES 5106 Advanced Structural Analysis*

Group 2: The student must choose three courses from the following. Group 2 courses are typically offered once in 2 years.

- CES 5XXX Masonry Design*
- CES 5325 Bridge Engineering
- CES 5606 Advanced Steel Design*
- CES 5706 Advanced Concrete Design*
- CES 5715 Prestressed Concrete
- CES 5801 Structural Design of Wood Structures
- CGN 5930 Geotech & Structural Design Practices*

Group 3: The following courses are recommended for Group 3. However, the student may choose other courses, including courses offered by other departments, with the advisor’s approval.

- Remaining courses from Group 2
- CEG 5115 Foundation Engineering*
- CES 5209 Structural Dynamics
- CES 5585 Wind Engineering*
- CES 5845 Composites in Civil Engineering
- CES 6116 Finite Elements in Structures
- EGN 5950 Research Methods in Engineering
- CCE 5212 Sustainable & Green Construction*
- COM 5450 Introduction to Project Management*
- ENT 5216 Foundations of Entrepreneurship & Leadership*
- Any other course that meets the career interest of the student, with the advisor's approval

Group 4: All graduate students in civil engineering shall take a 3-credit-hour course in math, statistics, or computation. The student may choose from the following courses:

- EGN 5458 Statistical Applications for Engineers*
- Any other 5000-level course in math, statistics, or computation with the advisor's approval

*Online option available or under development; course substitution may be permitted on case-by-case basis

**Required Course Work as Partial Fulfillment of the MEng Degree Option
with a Concentration in Construction Engineering (*Online Option Available)**

	Course Number and Title	Credits	Grade	Semester
Group 1. Required Core Courses (6 credit hours)	CCE 5036 Project Controls in Construction*			
	CCE 5510 Computer Applications in Construction*			
Group 2. Construction Courses (9 credit hours)				
Group 3. Other Elective Courses (12 credit hours)				
Group 4. Math, Statistics, or Computation (3 credit hours)				
	Total Credit Hours			

Articulation, Transfer, and Out-of-Department Courses: Students with Construction Engineering concentration who have not taken CCE4004 Construction Engineering must take it as an articulation course. Additional articulation courses may be required if the student’s undergraduate major is not civil engineering. Per university requirements, up to 6 credit hours of courses not counted toward a previous degree may be transferred from another regionally-accredited graduate school (or comparable international institution). Out-of-department courses are limited to 9 credit hours total.

Group 1: The student must take all Group 1 courses in the following list. Group 1 courses will be offered once in three semesters.

- CCE 5036 Project Controls in Construction*
- CCE 5510 Computer Applications in Construction*

Group 2: The student must choose three courses from the following. Group 2 courses are typically offered once in 2 years.

- CCE 5212 Sustainable and Green Construction*
- CGN 5615 Infrastructure Engineering and Management*
- CGN 5930 Infrastructure Resilience*
- CCE 5xxx Construction Equipment*
- CGN 5930 Infrastructure Systems of Systems

Group 3: The following courses are recommended for Group 3. However, the student may choose other courses, including courses offered by other departments, with the advisor’s approval.

- Remaining courses from Group 2
- CEG 5115 Foundation Engineering*
- CGN 5930 Geotech & Structural Design Practices*
- CGN 5825 Site Development*
- COM 5450 Introduction to Project Management*
- ENT 5216 Foundations of Entrepreneurship & Leadership*
- PAD 5388 Disaster Recovery and Mitigation*
- PAD 5397 Foundations of Emergency Management*
- Any other course that meets the career interest of the student, with the advisor's approval

Group 4: All graduate students in civil engineering shall take a 3-credit-hour course in math, statistics, or computation. The student may choose from the following courses:

- EGN 5458 Statistical Applications for Engineers*
- Any other 5000-level course in math, statistics, or computation with the advisor's approval

*Online option available or under development; course substitution may be permitted on case-by-case basis

**Required Course Work as Partial Fulfillment of the MEng Degree Option
with a Concentration in Transportation Engineering**

	Course Number and Title	Credits	Grade	Semester
Articulation Courses (if required)				
Group 1. Required Courses (9 credit hours)	TTE 5256 Traffic Operations or TTE 5270 Intelligent Transportation Systems			
	TTE 5305 Transportation Systems Analysis or TTE 5501 Transportation Economics			
	TTE 5074 Freight Terminals & Distribution Facilities or EGN 5464 Applied Simulation Modeling of Transportation Systems			
Group 2. Additional Courses (6 credit hours)				
Group 3. Other Elective Courses (12 credit hours)				
Group 4. Math, Statistics, or Computation (3 credit hours)				
Total Credit Hours				

Articulation, Transfer, and Out-of-Department Courses: Students with Transportation Engineering concentration who have not taken TTE 3004 Transportation Engineering and TTE 4201 Traffic Engineering (or TTE 4804 Highway Geometric Design) must take these courses as articulation courses. Additional articulation courses may be required if the student’s undergraduate major is not civil engineering. Per university requirements, up to 6 credit hours of courses not counted toward a previous degree may be transferred from another regionally-accredited graduate school (or comparable international institution). Out-of-department courses are limited to 9 credit hours total.

Group 1: The student must take three Group 1 courses in the following list, typically offered once in three semesters.

- TTE 5256 Traffic Operations or TTE 5270 Intelligent Transportation Systems
- TTE 5305 Transportation Systems Analysis or TTE 5501 Transportation Economics
- TTE 5074 Freight Terminals & Distribution Facilities or EGN 5464 Applied Simulation Modeling of Transportation Systems

Group 2: The student must choose three courses from the following list.

- TTE 5206 Advanced Traffic Flow
- CEG 5127 Highway & Airport Pavement Design
- EGN 5480 Metaheuristics & Hybrid Algorithms
- Remaining courses from Group 1

Group 3: The following courses are recommended for Group 3. However, the student may choose other courses, including courses offered by other departments, with the advisor’s approval.

- CES 5105 Advanced Mechanics of Materials
- CEG 5115 Foundation Engineering
- EGN 5950 Research Methods in Engineering
- CCE 5212 Sustainable and Green Construction
- CCE 5510 Computer Applications in Construction
- CCE 5036 Project Controls in Construction
- Other course that meets the career interest of the student, with advisor approval

Group 4: All graduate students in civil engineering shall take a 3-credit-hour course in math, statistics, or computation. The student may choose from the following courses:

- EGN 5458 Statistical Applications for Engineers
- Any 5000-level course offered by mathematics department
- Any 5000-level course offered by statistics department
- Any other 5000-level course in math, statistics, or computation with the advisor’s approval

**Required Course Work as Partial Fulfillment of the MEng Degree Option
with a Concentration in Geotechnical Engineering**

	Course Number and Title	Credits	Grade	Semester
Articulation Courses (if required)				
Group 1. Required Courses (9 credit hours)	CEG 5115 Foundation Engineering			
	CEG 5515 Earth Retaining Systems & Slope Design			
	CEG 5705 Environmental Geotechnics			
Group 2. Additional Depth Courses (6 credit hours)				
Group 3. Other Elective Courses (12 credit hours)				
Group 4. Math, Statistics, or Computation (3 credit hours)				
Total Credit Hours				

Articulation, Transfer, and Out-of-Department Courses: Students with Geotechnical Engineering concentration who have not taken CEG 4801 Geotechnical Design must take this course as an articulation course. Additional articulation courses may be required if the student’s undergraduate major is not civil engineering. Per university requirements, up to 6 credit hours of courses not counted toward a previous degree may be transferred from another regionally-accredited graduate school (or comparable international institution). Out-of-department courses are limited to 9 credit hours total.

Group 1: The student must take all Group 1 courses in the following list, typically offered once in three semesters.

- CEG 5115 Foundation Engineering
- CEG 5705 Environmental Geotechnics
- CEG 5515 Earth Retaining Systems & Slope Design

Group 2: The student must choose two courses from the following list.

- CEG 5127 Highway & Airport Pavement Design
- OCC 5930 Environmental Modeling
- CES 5150 Advanced Mechanics of Materials
- ISC 5236 Applied Groundwater Modeling
- CWR 5125 Groundwater Hydrology
- ISC 5226 Numerical Methods in Earth & Env Sciences
- ISC 5935 Uncertainty Analysis & Risk Management in Earth & Env Sciences

Group 3: The following courses are recommended for Group 3. However, the student may choose other courses, including courses offered by other departments, with the advisor’s approval.

- Remaining courses from Group 2
- EGN 5950 Research Methods in Engineering
- CES 6116 Finite Elements in Structures
- Other course that meets the career interest of the student, with the advisor’s approval

Group 4: All graduate students in civil engineering shall take a 3-credit-hour course in math, statistics, or computation. The student may choose from the following courses:

- EGN 5458 Statistical Applications for Engineers
- Any 5000-level course offered by mathematics department
- Any 5000-level course offered by statistics department
- Any other 5000-level course in math, statistics, or computation with the advisor’s approval

**Required Course Work as Partial Fulfillment of the MEng Degree Option
with a Concentration in Environmental/Water Resources Engineering**

	Course Number and Title	Credits	Grade	Semester
Articulation Courses (if required)				
Group 1. Required Courses (6 credit hours): Choose two courses from this list (Remaining courses may be used in Group 2 or 3 below).	ENV 5030 Applied Env Eng Microbiology			
	ENV 5565 Des of Water Quality Man Facilities			
	CWR 5205 Hydraulic Engineering II			
	CWR 5824 Coastal and Estuarine Hydraulics			
Group 2. Additional Env/WR Courses (9 credit hours)				
Group 3. Other Elective Courses (12 credit hours)				
Group 4. Math, Statistics, or Computation (3 credit hours)				
Total Credit Hours				

Articulation, Transfer, and Out-of-Department Courses: Students with Environmental/Water Resources concentration who have not taken ENV 4001 Environmental Engineering must take it as an articulation course. Additional articulation courses may be required if the student’s undergraduate major is not civil engineering. Per university requirements, up to 6 credit hours of courses not counted toward a previous degree may be transferred from another regionally-accredited graduate school (or comparable international institution). Out-of-department courses are limited to 9 credit hours total.

Group 1: The student must take two courses from the following list, one of which will be offered every fall/spring term.

- ENV 5030 Applied Env Eng Microbiology
- ENV 5565 Des of Water Quality Man Facilities
- CWR 5205 Hydraulic Engineering II
- CWR 5824 Coastal and Estuarine Hydraulics

Group 2: The student must choose three courses from the following list, which are offered on an irregular rotation.

- ENV 5055 Chemical Fate and Transport
- ENV 5617 Environmental Engineering Sustainability
- ENV 5028 Remediation Engineering
- CWR 5125 Groundwater Hydrology
- ENV 5076 Environmental Law for Engr & Scientists
- ENV 5504 Env Eng Processes & Unit Operations
- Remaining courses from Group 1

Group 3: The following courses are recommended for Group 3. However, the student may choose other courses, including courses offered by other departments, with the advisor’s approval.

- CEG 5705 Environmental Geotechnics
- CCE 5xxx Infrastructure System of Systems
- OCC 5930 Environmental Modeling
- ISC 5226 Numerical Methods in Earth & Env Sciences
- ISC 5935 Uncertainty Analysis & Risk Management in Earth & Env Sciences
- Any other course that meets the career interest of the student, with advisor approval

Group 4: All graduate students in civil engineering shall take a 3-credit-hour course in math, statistics, or computation. The student may choose from the following courses:

- EGN 5458 Statistical Applications for Engineers
- Any 5000-level course offered by math, CS or statistics department or with advisor’s approval