

CONSTRUCTION SAFETY LEADERSHIP MAJOR

Program Curriculum

Code	Title	Credits
Degree Core Requirements		
CEM 2404	Construction Project Documents	1
CEM 2824	Construction Site Analysis (C-)	3
CEM 3024	Construction Estimating and Scheduling	3
CEM 3134	Temporary Structures in Construction	3
CEE 3404	Introduction to Structural Engineering	3
CEE 3514	Introduction to Geotechnical Engineering	4
CEE 3684	Civil Engineering Materials	4
CEM 4024	Construction Law and Contract Administration	3
CEE 4074	Construction Engineering: Means and Methods	3
CEM 4445	CEM Capstone	3
Subtotal		30
Additional Course Requirements		
BC 2114	Information Technology in Design and Construction	3
BC 3114	Building Systems Technology	3
CEM 2714	Construction Safety Systems	3
CEM 3164	Construction Health and Safety	3
CEM 3714	Controlling Construction Safety Hazards	3
CEM 4714	Construction Safety Culture	3
CEM 4724	Construction Industry Futures: Safety, Health, and Wellness	3
ESM 2104	Statics	3
ESM 2204	Mechanics of Deformable Bodies (C-)	3
MATH 2114	Introduction to Linear Algebra	3
GEOS 2104	Elements of Geology (C-)	3
MATH 2204	Introduction to Multivariable Calculus	3
STAT 3704	Statistics for Engineering Applications	2
Advanced Course		3
<i>Career Bridge Experience</i> ¹		
ENGE 3900		
Subtotal		41
Pathways to General Education		
<i>Pathways Concept 1 - Discourse</i>		
ENGL 1105	First-Year Writing (1F)	3
ENGL 1106	First-Year Writing (1F)	3
CEM 2104	Introduction to Construction Engineering and Management (1A ; C-)	3
CEM 3084	Construction Economy (1A)	3
CEM 4446	CEM Capstone (1A)	3
<i>Pathways Concept 2 - Critical Thinking in the Humanities</i>		
Select six hours in Pathway 2 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G02)		6
<i>Pathways Concept 3 - Reasoning in the Social Sciences</i>		
ECON 2005	Principles of Economics	3
ECON 2006	Principles of Economics	3

Pathways Concept 4 - Reasoning in the Natural Sciences

CHEM 1035 & CHEM 1045	General Chemistry and General Chemistry Laboratory (C-)	4
PHYS 2305	Foundations of Physics	4

Pathways Concept 5 - Quantitative and Computational Thinking

MATH 1225	Calculus of a Single Variable (5F ; C-)	4
MATH 1226	Calculus of a Single Variable (5F)	4
MATH 2214	Introduction to Differential Equations (5A)	3

Pathways Concept 6 - Critique and Practice in Design and the Arts

Select three hours in Pathway 6a (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G06A)		3
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ENGE 1215	Foundations of Engineering (6D)	2
ENGE 1216	Foundations of Engineering (6A)	2

Pathways Concept 7 - Critical Analysis of Identity and Equity in the United States

Pathway 7 should be double counted with either Pathway 2 or 6a to avoid taking additional credit hours.

Subtotal		53
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Total Credits **124**

¹ Career Bridge Experiences help prepare students for post-graduation life and develop a professional identity. Internships, Co-ops, and Undergraduate Research are examples of possible Career Bridge Experiences. Students must participate in a Career Bridge Experience to complete the BS CEM degree. Because some of these experiences are not credit bearing, the ENGE 3900 course is used to track and assess student participation in a Career Bridge Experience and to record fulfillment of this degree requirement on the transcript. Students should enroll in ENGE 3900 during the semester (or one of the semesters) that they undertake the Career Bridge Experience. Enrollment in ENGE 3900 requires approval of a Career Bridge Plan. Further information about acceptable Career Bridge Experiences and the process for submitting a Career Bridge Plan are explained in CEM 2104.

Advanced Courses

The Construction Safety Leadership major requires 3 hours of advanced courses. Advanced courses may be selected from the following list:

Code	Title	Credits
CEE 3424	Reinforced Concrete Structures I	3
CEE 4404	Intermediate Structural Analysis	3
CEE 4454	Masonry Structural Design	3
CEE 4514	Methods in Geotechnical Engineering	3
CEE 4534	Earth Pressures and Foundation Structures	3
CEE 4544	Design of Earth Structures	3
CEE 4564	Introduction to Coastal and Marine Geotechnics	3
CEE 4610	Mechanics of Composite Materials	3
CEE 4614	Concrete Materials	3
CEE 4634	Infrastructure Condition Assessment	3
CEE 4664	Pavement Design	3
CEM 4314	Design of Wood Structures	3

Satisfactory Progress Towards Degree

University Policy 91 outlines university-wide minimum criteria to determine if students are making satisfactory progress towards the completion of their degrees. The Myers-Lawson School of Construction fully supports this policy. Specific expectations for satisfactory progress for construction safety leadership majors are as follows:

- Each student must meet the minimum University-wide criteria as described in Policy 91 and summarized in the Undergraduate Catalog (<http://www.undergradcatalog.registrar.vt.edu> (<http://www.undergradcatalog.registrar.vt.edu/>).
- A 2.0 overall GPA and a 2.0 in-major GPA must be maintained for continued enrollment in CEM.
- Upon completion of 64 GPA hours, students must have completed CEM 2824 Construction Site Analysis and ESM 2204 Mechanics of Deformable Bodies with a C- or better and have a minimum 2.0 in-major and a minimum 2.0 overall GPA.

Graduation Requirements

Students must pass all required courses, complete a professional bridge experience, and both the in-major and overall GPA must be at least 2.00 for graduation.

In-Major GPA

Consists of all courses taken under the CEE, CEM and BC designation.

Acceptable Substitutions

- MATH 2405H Mathematics in a Computational Context may be substituted for MATH 2114 Introduction to Linear Algebra
- MATH 2405H Mathematics in a Computational Context + MATH 2406H Mathematics in a Computational Context may be substituted for MATH 2114 Introduction to Linear Algebra + MATH 2204 Introduction to Multivariable Calculus + MATH 2214 Introduction to Differential Equations
- STAT 4604 Statistical Methods for Engineers may be substituted for STAT 3704 Statistics for Engineering Applications .
- CEE 3434 Design of Steel Structures I may be substituted for an advanced course.

Foreign Language Requirements

Students must have had 2 years of a foreign language in high school or one year at the college level (6 credit hours) of the same language. College-level credits used to meet this requirement do not count towards the degree.

Roadmap

First Year		
Fall Semester		Credits
CHEM 1035	General Chemistry (C-)	3
CHEM 1045	General Chemistry Laboratory (C-)	1
ENGE 1215	Foundations of Engineering	2
ENGL 1105	First-Year Writing	3
MATH 1225	Calculus of a Single Variable (C-)	4
Pathway 2		3
Credits		16

Spring Semester		
ENGE 1216	Foundations of Engineering	2
ENGL 1106	First-Year Writing	3
MATH 1226	Calculus of a Single Variable (C-)	4
MATH 2114	Introduction to Linear Algebra	3
PHYS 2305	Foundations of Physics	4
Credits		16

Second Year		
Fall Semester		
CEM 2104	Introduction to Construction Engineering and Management (C-)	3
CEM 2404	Construction Project Documents	1
ESM 2104	Statics	3
GEOS 2104	Elements of Geology (C-)	3
MATH 2204	Introduction to Multivariable Calculus	3
ECON 2005	Principles of Economics	3
Credits		16

Spring Semester		
BC 2114	Information Technology in Design and Construction	3
CEM 2824	Construction Site Analysis (C-)	3
ESM 2204	Mechanics of Deformable Bodies (C-)	3
CEM 2714	Construction Safety Systems	3
BC 3114	Building Systems Technology	3
Credits		15

Third Year		
Fall Semester		
CEE 3404	Introduction to Structural Engineering	3
CEE 3684	Civil Engineering Materials	4
MATH 2214	Introduction to Differential Equations	3
CEE 4074	Construction Engineering: Means and Methods	3
CEM 3084	Construction Economy	3
ENGE 3900		0
Credits		16

Spring Semester		
CEE 3514	Introduction to Geotechnical Engineering	4
CEM 3134	Temporary Structures in Construction	3
CEM 3714	Controlling Construction Safety Hazards	3
STAT 3704	Statistics for Engineering Applications	2
CEM 3024	Construction Estimating and Scheduling	3
Credits		15

Fourth Year		
Fall Semester		
CEM 4445	CEM Capstone	3
Advanced Course		3
Pathways 2, 7		3
CEM 4714	Construction Safety Culture	3
CEM 3164	Construction Health and Safety	3
Credits		15

Spring Semester		
CEM 4446	CEM Capstone	3
CEM 4024	Construction Law and Contract Administration	3
Pathways 6a		3
CEM 4724	Construction Industry Futures: Safety, Health, and Wellness	3
ECON 2006	Principles of Economics	3
Credits		15
Total Credits		124