

COLLEGE OF ENGINEERING  
THE MYERS-LAWSON SCHOOL OF CONSTRUCTION

DEGREE: BACHELOR OF SCIENCE (BS)

MAJOR: BUILDING CONSTRUCTION (BC)

For student date of entry under UG Catalog 2023-2024

CREDITS REQUIRED FOR GRADUATION: 131

FALL SEMESTER FIRST YEAR		Credits	SPRING SEMESTER FIRST YEAR		Credits
BC 1214 <sup>1</sup> Introduction to BC I	3		BC 1224 <sup>1</sup> Introduction to BC II <i>Pre: 1214 (C-)</i>	3	
COMM 1015 <sup>3</sup> Communication Skills <i>or</i> ENGL 1105 <sup>3</sup> First Year Writing	3		COMM 1016 <sup>3</sup> Communication Skills <i>Pre: 1015 or</i> ENGL 1106 <sup>3</sup> First Year Writing <i>Pre: 1105</i>	3	
GEOS 1004 <sup>3</sup> Earth Science: Our Past, Present, and Future	3		MATH 1225 <sup>3</sup> Calculus of a Single Variable (C-) <i>Pre: Math Ready</i>	4	
GEOS 1104 <sup>3</sup> Introduction to Earth Sciences Lab	1		ACIS 1004 <sup>3</sup> Accounting Foundations	3	
Free Elective	3		Pathway <sup>3</sup> 2	3	
<b>TOTAL</b>	<b>13</b>		<b>TOTAL</b>	<b>16</b>	
FALL SEMESTER SECOND YEAR		Credits	SPRING SEMESTER SECOND YEAR		Credits
BC 2114 <sup>1</sup> IT in Design & Construction <i>Co: 2014. Pre: 1224 or CEM 2104</i>	3		BC 2024 <sup>1</sup> Construction Principles II <i>Pre: 2014. Co: 2064</i>	3	
BC 2014 <sup>1</sup> Construction Principles I <i>Pre: 1224</i>	3		BC 2064 <sup>1</sup> Integrated Construction Series I <i>Pre: (2014, 2114) or CEM 2104</i>	3	
Free Elective	2		BC 2214 <sup>3</sup> Why Buildings Stand Up <i>Pre: 1224, MATH 1225</i>	3	
PHYS 2205 <sup>3</sup> General Physics <i>Pre: MATH 1016 or MATH 1016H or MATH 1025 or MATH 2015 or MATH 1026 or MATH 1205 or MATH 1205H or MATH 1525 or MATH 1535 or MATH 1225 or MATH 1225H</i>	3		BC 2104 <sup>2</sup> Building Effective Construction Teams <i>Pre: 1224, (COMM 1016 or ENGL 1106)</i>	3	
PHYS 2215 <sup>3</sup> General Physics Lab <i>Co: PHYS 2205</i>	1				
ECON 2005 <sup>3</sup> Principles of Economics <i>or</i> AAEC 1005 <sup>3</sup> Economics of the Food and Fiber System	3		ECON 2006 <sup>3</sup> Principles of Economics <i>Pre: ECON 2005 or</i> AAEC 1006 <sup>3</sup> Economics of the Food and Fiber System	3	
			BC 2134 <sup>2</sup> Construction Data Analysis <i>Pre: MATH 1225</i>	2	
<b>TOTAL</b>	<b>15</b>		<b>TOTAL</b>	<b>17</b>	
FALL SEMESTER THIRD YEAR		Credits	SPRING SEMESTER THIRD YEAR		Credits
BC 3114 <sup>1</sup> Building Systems Technology <i>(Pre: 2024, (PHYS 2305 or PHY 2205), PHYS 2215 or (CEM 2104, PHYS 2305))</i>	3		BC/CEM 3134 <sup>2</sup> Temporary Structures in Construction <i>(Pre: 2044, 2024) or CEE 3684)</i>	3	
BC 3064 <sup>1</sup> Integrated Construction II <i>Pre: (Pre: 2064, (PHYS 2205, PHYS 2215) or (CEM 2104, PHYS 2305). Co: 3114</i>	3		FIN 3054 <sup>2</sup> Legal and Ethical Environment of Business <i>Pre: Sophomore Standing</i>	3	
BC 2044 <sup>1</sup> Buildings and Materials <i>Pre: 2214 or CEM 2104</i>	3		Technical Elective	3	
CEM 3084 <sup>2</sup> Construction Economy <i>Pre: 2104 or BC 2024</i>	3		Business & Management Elective	3	
Track Core Elective	3		ENGL 3764 Technical Writing <sup>3</sup> <i>Pre: 1106 or 1204 or COMM 1016, Jr Standing</i>	3	
Pathway <sup>3</sup> 6a	3		Track Core Elective	3	
<b>TOTAL</b>	<b>18</b>		<b>TOTAL</b>	<b>18</b>	
FALL SEMESTER FOURTH YEAR		Credits	SPRING SEMESTER FOURTH YEAR		Credits
BC 4064 <sup>1</sup> Integrated Construction III <i>Pre: 3064</i>	3		BC 4444 <sup>2</sup> Construction Practice II <i>Pre: 4434</i>	4	
BC 4434 <sup>2</sup> Construction Practice I <i>Pre 3064 OR 5264G OR (5514, 5154) Co: 4064</i>	3		Business & Management Elective	3	
BC 4164 <sup>2</sup> Process Planning and Design <i>Pre: 3114, 3064</i>	3		Technical Elective	3	
MGT 3304 <sup>2</sup> Management Theory and Leadership Practice <i>Pre: Sophomore Standing</i>	3		Pathway <sup>3</sup> 6d	3	
Track Core Elective	3		Pathway <sup>3</sup> 2, 7*	3	
Technical Elective	3				
<b>TOTAL</b>	<b>18</b>		<b>TOTAL</b>	<b>16</b>	

**General Information about the Checksheet:** Superscripted annotation after the course number (1) indicates degree core requirements, (2) indicates major requirements, and (3) indicates Pathways course or Pathways elective.

**Pathway to General Education (Pathway)**

Consult the pathway courses table: <https://www.pathways.prov.vt.edu/about/pathways-guides.html>. Pathways courses need to be completed prior to graduation.

<b>Pathway 1:</b> Discourse (6 hrs foundational, 3 hrs advanced)	<i>Foundational: COMM 1015 or ENGL 1105</i>	(3)	<i>Foundational: COMM 1016 or ENGL 1106</i>	(3)
	<i>Advanced: ENGL 3764 Technical Writing</i>			(3)
<b>Pathway 2*:</b> Critical Thinking in the Humanities (6 hrs)		(3)		(3)
<b>Pathway 3:</b> Reasoning in the Social Sciences (6 hrs)	<b>ECON 2005 or AAEC 1005</b>	(3)	<b>ECON 2006 or AAEC 1006</b>	(3)
<b>Pathway 4:</b> Reasoning in the Natural Sciences (8 hrs)	<b>GEOS 1004 + 1104</b>	(4)	<b>PHYS 2205 + 2215</b>	(4)
<b>Pathway 5:</b> Quantitative and Computational Thinking (7 hrs foundational, 3 hrs advanced)	<i>Foundational: MATH 1225</i> Pre: Eligible to enroll	(4)	<i>Foundational: ACIS 1004</i>	(3)
	<i>Advanced: BC 2214</i>			(3)
<b>Pathway 6:</b> Critique and Practice in Design and the Arts (3 hrs arts, 3 hrs design)	<i>Arts:</i>			(3)
	<i>Design:</i>			(3)
<b>Pathway 7*:</b> Critical Analysis of Identity and Equity in the United States (3 hrs)	*Pathway 7 should be double counted with either Pathway 2 or 6a to avoid taking additional credit hours.			(3)

### Business and Management Electives

The BC degree requires 6 credits of business and management electives. These courses may be selected from the following list:

- AAEC 3324 (3) Environment & Sustainable Development Economics *Pre: AAEC 1005 or 1006 or Econ 2005*
- AAEC 3454 (3) Small Business Mgt & Entrepreneurship *Pre: AAEC 2434 or ACIS 2115 or MGT 3064*
- AAEC 4754 (3) Real Estate Law *Pre: Junior Standing*
- ACIS 2116 (3) Principles of Accounting *Pre: 2115 (C-)*
- AS 3215, 3216 (3,3) Air Force Management & Leadership (*Membership in the Corps of Cadets is required.*) *Co: 2944; Pre: 2116 for 3215. Co: 2944; Pre: 2116 for 3216*
- CEM 4024 (3) Construction Law & Contract Admin *Pre: Senior Standing*
- ISE 4004 (3) Theory of Organization
- MGT 2064 (3) Foundations of Entrepreneurship
- MGT 2354 (3) Teams, Leadership, & Business *Pre: Sophomore Standing*
- MGT 3064 (3) Cornerstones Entrepreneurship *Pre: MGT 2064 and completion of 45 credit hours and two area 5 courses*
- MKTG 3104 (3) Marketing Management *Pre: Junior Standing*
- MKTG 4734 (3) Real Estate Marketing *Pre: 3104 or 3104H, Junior Standing*
- MN 4005, 4006 (3,3) Leadership & Management Ethics *Membership in the Corps of Cadets is required Pre: Sophomore Standing*
- MS 4005, 4006 (3,3) Military Science IV Army Reserve Officer Training *Membership in the Corps of Cadets is required Pre: MS 3005-3006*
- PM 4684 (3) Leasing Commercial Properties *Pre: Junior Standing*
- REAL 2004 (3) Principles of Real Estate (UAP 2004)

### Track Core

The BC degree requires 9 credits of a track concentration. Choose 1 of the 4 tracks below to fulfill requirements.

#### Emergent Technologies for Construction, Housing and Development (ET)

- BC 2354 (3) Residential Construction Technologies *Pre: BC 2014*
- BC 4324 (3) Innovation in Residential Construction *Pre: BC 2354, BC 3064*
- BC 4374 (3) Residential Housing & Land Development *Pre: BC 3064 BC 4324*

#### Information Systems in Built Environment (ISBE)

- BC 4114 (3) Building Information Modeling in Design and Construction *Co: CS 1014. Pre: 2114 or (ENGE 1215, ENGE 1216)*
- BC 4124 (3) Digital Construction & Manufacturing *Pre: BC 2114*
- BC 4364 (3) Lifecycle BIM for Facility Management *Pre: BC 2114, BC 3114*

Sustainable Building Performance (SBP)

BC 3014 (3) Building Physics & Environmental Systems *Pre: PHYS 2205, 2215 or PHYS 2305*

BC 4314 (3) Building Performance & Energy Management *Pre: 3014, 3114*

BC 4334 (3) Sustainable Building Performance Management *Pre: BC 3064, BC 3014*

Directed Elective

Students pursuing double majors may use courses from their other major for directed electives to build their own track as long as the courses are not building construction major requirements. Students must have a plan of study signed by the Department Head or Assistant Director of Student Affairs comprised of courses to form a focused area of study for this track.

Department Approved Elective (3)

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**Technical Electives**

The BC degree requires 6 credits of technical electives. 3 of the 6 credits are required to be an upper division (3000-4000) course.

BC Electives

Any BC 2000, 3000, 4000, or 5000 level course or special study that does not fulfill a construction major requirement. This includes BC track courses from outside their designated track selection providing capacity. These courses cannot be double-counted for both track and technical electives.

BC Variable Credit

BC 4754 (1-19)^ Field Work/Practicum

BC 4974 (1-19)^ Independent Study

BC 4994 (1-19)^ Undergraduate Research

CEM

CEM 2824 (3) Construction Site Analysis *Co: CEM 2104 or BC 1224 or CEE 2834*

CEM 3024 (3) Construction Estimating and Scheduling *Pre: CEM 2104 or BC2024 (C-)*

CEM 3154 (3) Smart Construction *Pre: BC 2114*

CEM 3064 (3) Intro to Lean Construction *Pre: CEM 2104 or BC 2024*

CEM 3074 (3) Global Design and Construction for Sustainable Development *Pre: Junior Standing*

CEM 3164 (3) Construction Health and Safety *Pre: CEM 2104 or BC 2024*

CEM 4624 (3) Construction Robotics & Automation *Pre: CEM 2104 or BC 2024*

CEM 4634 (3) Data Analysis and Visualization for Construction & Facilities Management *Pre: CEM 2104 or BC 2024*

REAL (Restricted to BC students pursuing double major or minor with Real Estate)

REAL 3034 (3) Real Estate Market Analysis *Pre: REAL 2034 (ECON 2005 or AAEC 1005)*

REAL 3044 (3) Financing Real Estate Projects *Pre: REAL 2034 or BIT 2405, AAEC 1005 or ECON 2005*

Others

BC 4024/CEE 4014 (3) Estimating, Production, and Cost Engineering *Pre: BC 2024, BC 2064*

CS 1014 (3) Introduction to Computational Thinking

SBIO 2314 (3) Building Information Modeling for Wood-Based Construction

SBIO 3324 (3) Green Building Systems

VT Corp of Cadets Academic Offerings (Restricted to BC Corp of Cadets students)

MGT 3935-3936 Advanced Personal Development for Cadets Membership in the Corps of Cadets is required. (1H,2L,2C)

MGT 3945-3946 Cadet Organizational Leadership Membership in the Corps of Cadets is required. (1H,1C)

MGT 4935-4936 Cadet Citizen Leader Practicum Membership in the Corps of Cadets is required. (1H,2L,2C)

MGT 4945-4946 Executive Leadership for Cadets Senior standing in the Corps of Cadets is required. (1H,1C)

Students enrolled in a minor may use 6 credits of their minor requirements as technical electives. (3 of the 6 credits are required to be an upper division (3000-4000) course.)

Technical elective credit may be earned in study abroad opportunities. Please see your BC undergraduate academic advisor.

Courses other than those above may be acceptable as technical electives; however, substitutions must be approved by the BC Department Head or Assistant Director **before** the course is taken. Students are responsible for the satisfaction of prerequisites required for their chosen technical electives.

^ Course must be taken for at least 3 credit hours.

**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.

**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 BC 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>.) In-major and overall GPA required to graduate is 2.0.
- Upon having attempted 72 credit hours (entering as freshman) or 90 credit hours (entering as transfer), a student must successfully complete BC 2114, 2214, MATH 1225, PHYS 2205/2215. Student who does not meet the requirements will be notified upon reaching 72 credit hours (or 90 credit hours for transfer students) that they must complete any missing courses before being allowed to continue into the upper-level BC courses. (Upper-level courses are all 3000 and 4000 level BC courses.) Student will have two terms of enrollment to rectify any deficiencies. Failure to complete these pivotal courses within 2 semesters will result in student being required to transfer out of the major. This policy is strictly enforced.

**In-Major GPA:** Consists of all courses under the BC designation.

**Prerequisites** for courses are listed in the Undergraduate Course Catalog. It is the responsibility of the student to make sure the prerequisites for each course have been met. Students who enroll in a course for which they clearly have not satisfied the prerequisites or equivalent may be dropped from the course. Deliberate false statements testifying to the satisfaction of prerequisites constitute a violation of the honor code.

**Statement of Hidden Prerequisites:** Pre-requisites for each course are listed after the course title. The letter grade notation, such as (C-) indicates the minimum grade students must earn in the pre-requisite course. There are no hidden pre-requisites in this program of study. But prerequisites may change from what is indicated. Be sure to consult the University Catalog or check with your advisor for the most current requirements.

**Additional Checksheet Comments:**

- REAL 2034 Real Estate Data Analysis (3 cr) may be substituted for BC 2134 Construction Data Analysis (2 cr)
- STAT 2004 Introductory Statistics (3 cr) may be substituted for BC 2134 Construction Data Analysis (2 cr)
- ESM 2104 Statics (3 cr) may be substituted for BC 2214 (3 cr) *but* the student is required to have another pathway 5a to fulfill pathway 5 requirement
- PHYS 2305 Foundations of Physics (4 cr) may be substituted for PHYS 2205 General Physics (3) + PHYS 2215 General Physics Lab (1)
- ACIS 2115 (3 cr) may be substituted for ACIS 1004 (3 cr) *but* the student is required to have another pathway 5 (either foundational or advanced) to fulfill pathway 5 requirement