

BS Civil Engineering Curriculum – Catalog Year 2023-24

Freshman Year

First Semester	R	L	C	Second Semester	R	L	C
CEN 110 Civil Engineering Programming	0	2	2	CEN 161 Civil Eng. Design Graphics	1	3	2
CHM 153 Prin. Mod. Chem. for Engineers ¹	3	0	3	CHM 152 Principles Modern Chemistry II	3	0	3
CHM 161 Intro. to Applied Chemistry I	0	3	1	ENL 102 Critical Writing & Reading II	3	0	3
EGR 111 Intro. Engineering & Computing	2	3	3	MTH 154 Calc. Applied Sci. & Eng. II	4	0	4
ENL 101 Critical Writing & Reading I	3	0	3	PHY 111 Physics for Sci. & Eng. I	4	2	4
MTH 153 Calc. Applied Sci. & Eng. I	4	0	4				
			16				16

Sophomore Year

First Semester	R	L	C	Second Semester	R	L	C
EGR 241 Engineering Mechanics I: Statics ²	3	0	3	BIO/BNG BIO/BNG Requirement ⁴	3	0	3
ENL 266 Technical Communications	3	0	3	CEN 202 Mechanics of Materials ²	3	0	3
MTH 213 Calc. Applied Sci. & Eng. III	4	0	4	CEN 212 Civil Engineering Materials Lab	0	3	1
PHY 112 Physics for Sci. & Eng. II	4	2	4	EGR 242 Engineering Mechanics II: Dynamics ²	3	0	3
University Studies ³	3	0	3	MTH 212 Differential Equations	3	0	3
			17	University Studies ³	3	0	3
							16

Junior Year

First Semester	R	L	C	Second Semester	R	L	C
CEN 209 Intro to Transportation	3	0	3	CEN 304 Intro. Environmental Engineering	3	0	3
CEN 303 Fluid Mechanics	3	0	3	CEN 313 Fluid Mechanics Lab	0	3	1
CEN 305 Soil Mechanics	3	0	3	CEN 314 Environmental Eng. Lab	0	3	1
CEN 306 Structural Analysis	3	0	3	Technical Elective ⁵	3	0	3
CEN 315 Soil Mechanics Lab	0	3	1	Technical Elective ⁵	3	0	3
University Studies ³	3	0	3	Technical Elective ⁵	3	0	3
			16				14

Senior Year

First Semester	R	L	C	Second Semester	R	L	C
CEN 491 Civil Engineering Project ⁶	2	0	2	CEN 491 Civil Engineering Project ⁶	2	0	2
EGR 303 Engineering Economics ⁷	3	0	3	Technical Elective ⁵	3	0	3
Technical Elective ⁵	3	0	3	Technical Elective ⁵	3	0	3
Technical Elective ⁵	3	0	3	Technical Elective ⁵	3	0	3
Technical Elective ⁵	3	0	3	University Studies ³	3	0	3
			14				14

TOTAL CREDITS = 123

R = Recitation (hours)

L = Laboratory (hours)

C = Number of Credits

¹ CHM 151 may be taken in place of CHM 153.

² Must be passed with a grade of C- or better.

³ See University Studies 3A, 3B, 4A, & 4B requirement (refer to www.umassd.edu/universitystudies/approvedcourses).

⁴ BIO/BNG course must be either BIO 143 or BNG 255. Satisfies University Studies 2B requirement.

⁵ Must be chosen from the approved list of courses and must satisfy CEN distribution requirements.

⁶ Course spans over two semesters. Also satisfies University Studies 5A/B requirements.

⁷ Course meets University Studies 4C requirement.

Students are required to take 27 credits of **Technical Electives** as follows:

12 cr. CEN Core Technical Electives: Must select any 4 of the following 5 core course options

1. CEN 325 Water Resources Engineering
 2. CEN 323 Geotechnical Engineering
 3. CEN 334 **or** CEN 419 Traffic Engineering or Advanced Traffic Engineering
 4. CEN 411 Water Quality Engineering
 5. CEN 307 **or** CEN 408 Structural Design Class (Concrete or Steel)
- (Taking CEN 307 and CEN 408 does NOT count as 2 different options)
(Taking CEN 334 and CEN 419 does NOT count as 2 different options)

15 cr. CEN Technical Electives: May select from any of the approved list of CEN Technical Electives
Technical Electives: To satisfy the 15 credits of general technical electives required (beyond the Core Technical elective requirement), students may choose from any of the following:

- Any of the allowed Core Technical Electives, which are not used to satisfy the Core requirements.
- Any CEN course offered at the 400 level, which is not used to satisfy another requirement.
- Any CEN course offered at the 500 level or above, with permission of the course instructor.
- Up to 3 credits of the 15-credit requirement may be satisfied by a Science Elective. A Science Elective can be any BIO, BNG, CHM, MLS, or MAR course; EGR 411; or any PHY course numbered above 150. Independent study, seminars, and courses used to satisfy other CEN requirements do not qualify. If BIO 143 or BNG 255 was used to satisfy the BIO/BNG Requirement, then it may not be used as the Science Elective.

To be eligible to enroll in CEN 491, students must have completed 4 of the following 5 core groups:

1. CEN 209 + CEN 334 (or CEN 419)
2. CEN 305 + CEN 323
3. CEN 306 + either CEN 307 or CEN 408
4. CEN 303 + CEN 325
5. CEN 304 + enrolled in CEN 411