

## BS Civil Engineering Curriculum – ERE Concentration Catalog Year 2025-26

Freshman	Year								
First Semester			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 151	Prin. Mod. Chem. for Engineers <sup>1</sup>	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 113	Classical Physics I <sup>1</sup>	4	2	4
MTH 153	Calc. Applied Sci. & Eng. I	4	0	4					
				16					16
Sophomor									
First Semes		R	L	C	Second Sem		R	L	C
EGR 241	Engineering Mechanics I: Statics <sup>2</sup>	3	0	3		BIO/BNG Requirement <sup>4</sup>	3	0	3
ENL 266	Technical Communications	3	0	3		Mechanics of Materials <sup>2</sup>	3	0	3
MTH 213	Calc. Applied Sci. & Eng. III	4	0	4	CEN 212	Civil Engineering Materials Lab	0	3	1
PHY 114	Classical Physics II <sup>1</sup>	4	2	4	EGR 242	Engineering Mechanics II: Dynamics <sup>2</sup>	3	0	3
	University Studies <sup>3</sup>	3	0	3	MTH 212	Differential Equations	3	0	3
						University Studies <sup>3</sup>	3	0	3
				17					16
Junior Yea	ır								
First Semes		R	L	C	Second Se		R	L	C
CEN 209	Intro to Transportation	3	0	3	CEN 304	Intro. Environmental Engineering <sup>5</sup>	3	0	3
CEN 303	Fluid Mechanics <sup>5</sup>	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	CEN 325	Water Resource Engineering	3	0	3
CEN 315	Soil Mechanics Lab	0	3	1	CEN	ERE List A Elective <sup>6</sup>	3	0	3
	University Studies <sup>3</sup>	3	0	2	CENT	EDE I :-4 A E14:6		0	3
	om versity statutes	3	U	3	CEN	ERE List A Elective <sup>6</sup>	3		
	·	3	U	16	CEN	ERE LIST A Elective	3		14
Senior Yea	ır	-		16					
First Semes	u <b>r</b> ster	R	L	16 C	Second Semo	ester	R	L	C
First Semes CEN 411	or ster Water Quality Engineering	R 3	L 0	16 C 3		ester Civil Engineering Project <sup>7,8</sup>	R 2	L 0	C 2
First Semes	or Ster Water Quality Engineering Pollution Transportation	R	L	16 C 3 3	Second Semo	ester Civil Engineering Project <sup>7,8</sup> ERE List C Elective <sup>6</sup>	R	L	C
First Semes CEN 411	water Quality Engineering Pollution Transportation Civil Engineering Project <sup>7,8</sup>	R 3 3 2	L 0 0	T6 C 3 2	Second Semo	ester Civil Engineering Project <sup>7,8</sup> ERE List C Elective <sup>6</sup> ERE List C Elective <sup>6</sup>	R 2 3 3	L 0 0	C 2 3 3
First Semes CEN 411 CEN 465	Water Quality Engineering Pollution Transportation Civil Engineering Project <sup>7,8</sup> Engineering Economics <sup>9</sup>	R 3 3 2 3	L 0 0 0	16 C 3 3 2 3	Second Semo	ester Civil Engineering Project <sup>7,8</sup> ERE List C Elective <sup>6</sup> ERE List C Elective <sup>6</sup> ERE List C Elective <sup>6</sup>	R 2 3 3 3	L 0 0 0	C 2 3
First Semes CEN 411 CEN 465 CEN 491	water Quality Engineering Pollution Transportation Civil Engineering Project <sup>7,8</sup>	R 3 3 2	L 0 0	C 3 3 2 3 3	Second Semo	ester Civil Engineering Project <sup>7,8</sup> ERE List C Elective <sup>6</sup> ERE List C Elective <sup>6</sup>	R 2 3 3	L 0 0	C 2 3 3 3 3 3
First Semes CEN 411 CEN 465 CEN 491 EGR 303	Water Quality Engineering Pollution Transportation Civil Engineering Project <sup>7,8</sup> Engineering Economics <sup>9</sup>	R 3 3 2 3	L 0 0 0	16 C 3 3 2 3	Second Semo	ester Civil Engineering Project <sup>7,8</sup> ERE List C Elective <sup>6</sup> ERE List C Elective <sup>6</sup> ERE List C Elective <sup>6</sup>	R 2 3 3 3	L 0 0 0	C 2 3 3 3

<sup>&</sup>lt;sup>1</sup> CHM 153, PHY 111, and PHY 112 may be taken in place of CHM 151, PHY 113, and PHY 114, respectively.

<sup>&</sup>lt;sup>2</sup> Must be passed with a grade of C- or better.

<sup>&</sup>lt;sup>3</sup> See University Studies 3A, 3B, 4A, & 4B requirement (refer to <a href="https://www.umassd.edu/universitystudies/approvedcourses">www.umassd.edu/universitystudies/approvedcourses</a>).

<sup>&</sup>lt;sup>4</sup> BIO/BNG course must be either BIO 143 or BNG 255. Satisfies University Studies 2B requirement.

<sup>&</sup>lt;sup>5</sup> The ERE Concentration requires these courses to be passed with a grade of C- or better.

<sup>&</sup>lt;sup>6</sup> Must be chosen from the approved list of courses and must be passed with a grade of C or better.

<sup>&</sup>lt;sup>7</sup>Course spans over two semesters. Also satisfies University Studies 5A/B requirements.

<sup>&</sup>lt;sup>8</sup> Project must have an Environmental Resources Engineering emphasis.

<sup>&</sup>lt;sup>9</sup> Course meets University Studies 4C requirement.

## **Environmental Resource Engineering (ERE) Concentration**

The Environmental Resources Engineering (ERE) Concentration is offered to students who wish to expand their education with an emphasis on environmental concerns, assessment of the environmental impact of new or existing products or processes, methods for solving problems resulting from pollution in the air, water, or earth, and the management of energy and resources, in order to minimize pollution in the environment. Students should declare their intention no later than the junior year and must earn a grade of C- or better in both CEN 303 and CEN 304 in order to enroll in the List B and List C courses as well as to have the concentration appear on the transcript of record.

The concentration consists of consists of completing both CEN 325 and CEN 411 as well as a combination of courses from three lists. Students are required to take two courses from List A, two courses from List B, and three courses from List C. Students will also complete a capstone design project having an environmental resources engineering emphasis. Students pursuing the concentration are required to earn at least a grade of C in each course in List B and List C.

List A: CEN Foundation Core: Two courses required.

Course	Title	
CEN 307 or CEN 408	Analysis & Design of Reinforced Concrete Structures OR Analysis & Design of Steel	
	Structures	
CEN 323	Geotechnical Engineering	
CEN 334	Traffic Engineering	

List B: ERE Foundation Core: EGR 411 and CEN 465 are required. Each course must be passed with a grade of C or better.

Course	Title	
EGR 411	Intro to Geographic Info Systems	
CEN 465	Pollutant Transport in the Environment	

List C: ERE Technical Electives: Three courses required. Each course must be passed with a grade of C or better.

Course	Title
CEN 412	Pollution Control of Waste
CEN 414	Hazardous Waste Management
CEN 424	Physical-Chemical Treatment Processes
CEN 428	Probability and Statistics for Civil Engineers
CEN 430	Topics in Civil & Environmental Engineering (topic must be relevant to ERE Concentration – requires prior approval of the advisor)
CEN 433	Special Topics in Geotechnical Engineering
CEN 455	Sustainable Infrastructure
CEN 456	Waves and Tides
CEN 460	Climate Resiliency Engineering
CEN 464	Environmental Water Chemistry
CEN 475	Introduction to Environmental Turbulence
CHM 356	Atmospheric/Terrestrial Environmental Chemistry
EGR 415	Environmental Fluid Mechanics
SUS 348	Ocean Policy and Law