

## BS Civil Engineering ERE Concentration

### Graduating Classes of 2022 and 2023 (Catalog years 2018-19 and 2019-20)

**Freshman Year**

First Semester	R	L	C	Second Semester	R	L	C
ENL 101 Critical Writing & Reading I	3	0	3	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
MTH 153 Calc. Applied Sci. & Eng. I	4	0	4	PHY 111 Physics for Sci. & Eng. I	4	2	4
CEN 161 Civil Eng. Design Graphics	1	3	2	CHM 152 Principles Modern Chemistry II	3	0	3
CHM 153 Prin. Mod. Chem. For Engineers	3	0	3	CHM 162 Intro. To Applied Chemistry II	0	3	1
			<b>15</b>				<b>15</b>

**Sophomore Year**

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

**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 [6]	0	3	1
CEN 305 Soil Mechanics [5]	3	0	3	CEN 314 Environmental Eng. Lab	0	3	1
CEN 306 Structural Analysis [5]	3	0	3	CEN 325 Water Resources Eng.	3	0	3
CEN 315 Soil Mechanics Lab	0	3	1	CEN ERE List A Elective	3	0	3
EGR 411 Intro to GIS	3	0	3	CEN ERE List A Elective	3	0	3
			<b>16</b>				<b>14</b>

**Senior Year**

First Semester	R	L	C	Second Semester	R	L	C
CEN 491 Civil Engineering Project [7,8,9]	2	0	2	CEN 491 Civil Engineering Project [7,8,9]	2	0	2
EGR 303 Engineering Economics [10]	3	0	3	CEN 452 Ethical, Prof. & Safety Issues	1	0	1
CEN 411 Water Quality Engineering	3	0	3	ERE List C Elective	3	0	3
University Studies [4]	3	0	3	ERE List C Elective	3	0	3
ERE List B Elective	3	0	3	ERE List C Elective	3	0	3
			<b>14</b>	University Studies [4]	3	0	<b>3</b>
							<b>15</b>

**TOTAL CREDITS = 122**

R = Recitation (hours)

L = Laboratory (hours)

C = Number of Credits

[1] BIO/BNG course must be either BIO 143 or BNG 255. Satisfies University Studies 2-B requirement.

[2] This course meets University Studies 1C requirement.

[3] CEN 202 requires the completion of EGR 241 with a grade of C- or better.

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

[5] CEN 305 and CEN 306 require the completion of CEN 202 with a grade of C- or better.

[6] CEN 313 requires the completion of CEN 303 with a grade of C- or better.

[7] Course spans over two semesters; grades awarded at the end of the spring semester.

[8] Course meets University Studies 5A/B requirements.

[9] Project must have an Environmental Resources Engineering emphasis.

[10] Satisfies University Studies 4-C requirements.

# Environmental Resource Engineering (ERE) Concentration

Students interested in the ERE Concentration must meet specific admission requirements in their first two years to be considered for this concentration.

Admission to the ERE Concentration requires a C or better in CHM 152 (Principles of Modern Chemistry II) and a cumulative GPA of 2.500 (based on their first three semesters). Qualified students should declare their intention during the sophomore year.

The concentration 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 <u>OR</u> Analysis & Design of Steel Structures
CEN 323	Geotechnical Engineering
CEN 334	Traffic Engineering

List B: ERE Foundation Core: EGR 411 is required. Choose one additional course.

Course	Title
EGR 411	Intro to Geographic Info Systems
CEN 464	Environmental Water Chemistry
EGR 415	Environmental Fluid Mechanics

List C: ERE Technical Electives: Three courses required.

Course	Title
CEN 412	Pollution Control of Waste
CEN 414	Hazardous Waste Management
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 456	Waves and Tides
CEN 459	Dynamics of Stratified Flows
CEN 460	Climate Resilience Engineering
CEN 464*	Environmental Water Chemistry
CEN 465	Pollutant Transport in the Environment
CEN 475	Introduction to Environmental Turbulence
CHM 356	Atmospheric/Terrestrial Environmental Chemistry
EGR 415*	Environmental Fluid Mechanics
EGR 490**	Engineering Internship
SUS 348	Ocean Policy and Law

\*Course can't double count. Course not used for List B can meet List C requirement.

\*\*Use of EGR 490 (up to 3 credits) as a Technical Elective requires prior approval of Advisor and Department Chairperson.