UMass Dartmouth
COLLEGE OF ENGINEERING

BS Civil Engineering Curriculum – ERE Concentration
Catalog Year 2023-24

Freshman Year

First Semester		R	L	C
CEN 110	Civil Engineering Programming	0	2	2
CHM 153	Prin. Mod. Chem. for Engineers[1]	3	0	3
CHM 161	Intro. to Applied Chemistry I	0	3	1
EGR 111	Intro. Engineering & Computing	2	3	3
ENL 101	Critical Writing & Reading I	3	0	3
MTH 153	Calc. Applied Sci. & Eng. I	4	0	4
				16

Second Semester		R	L	C
CEN 161	Civil Eng. Design Graphics	1	3	2
CHM 152	Principles Modern Chemistry II	3	0	3
ENL 102	Critical Writing & Reading II	3	0	3
MTH 154	Calc. Applied Sci. & Eng. II	4	0	4
PHY 111	Physics for Sci. & Eng. I	4	2	4
				16

Sophomore Year

First Semester		R	L	C
EGR 241	Engineering Mechanics I: Statics[2]	3	0	3
ENL 266	Technical Communications	3	0	3
MTH 213	Calc. Applied Sci. & Eng. III	4	0	4
PHY 112	Physics for Sci. & Eng. II	4	2	4
	University Studies[3]	3	0	3
				17

Second Semester		R	L	C
BIO/BNG	BIO/BNG Requirement[4]	3	0	3
CEN 202	Mechanics of Materials[2]	3	0	3
CEN 212	Civil Engineering Materials Lab	0	3	1
EGR 242	Engineering Mechanics II: Dynamics[2]	3	0	3
MTH 212	Differential Equations	3	0	3
	University Studies[3]	3	0	3
				16

Junior Year

First Semester		R	L	C
CEN 209	Intro to Transportation	3	0	3
CEN 303	Fluid Mechanics[5]	3	0	3
CEN 305	Soil Mechanics	3	0	3
CEN 306	Structural Analysis	3	0	3
CEN 315	Soil Mechanics Lab	0	3	1
EGR 411	Intro to GIS	3	0	3
				16

Second Semester		R	L	C
CEN 304	Intro. Environmental Engineering[5]	3	0	3
CEN 313	Fluid Mechanics Lab	0	3	1
CEN 314	Environmental Eng. Lab	0	3	1
CEN 325	Water Resource Engineering	3	0	3
CEN	ERE List A Elective[6]	3	0	3
CEN	ERE List A Elective[6]	3	0	3
				14

Senior Year

First Semester		R	L	C
CEN 411	Water Quality Engineering	3	0	3
CEN 491	Civil Engineering Project[7,8]	2	0	2
EGR 303	Engineering Economics[9]	3	0	3
	ERE List B Elective[6]	3	0	3
	University Studies[3]	3	0	3
				14

Second Semester		R	L	C
CEN 491	Civil Engineering Project[7,8]	2	0	2
	ERE List C Elective[6]	3	0	3
	ERE List C Elective[6]	3	0	3
	ERE List C Elective[6]	3	0	3
	University Studies[3]	3	0	3
				14

TOTAL CREDITS = 123 R = Recitation (hours) L = Laboratory (hours) C = Number of Credits

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[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] The ERE Concentration requires these courses to be passed with a grade of C- or better.
[6] Must be chosen from the approved list of courses and must be passed with a grade of C or better.
[7] Course spans over two semesters. Also satisfies University Studies 5A/B requirements.
[8] Project must have an Environmental Resources Engineering emphasis.
[9] 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 is required. Choose one additional course. Each course must be passed with a grade of C or better.

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. 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 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 Stratifies Flows
CEN 460	Climate Resiliency 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
SUS 348	Ocean Policy and Law

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