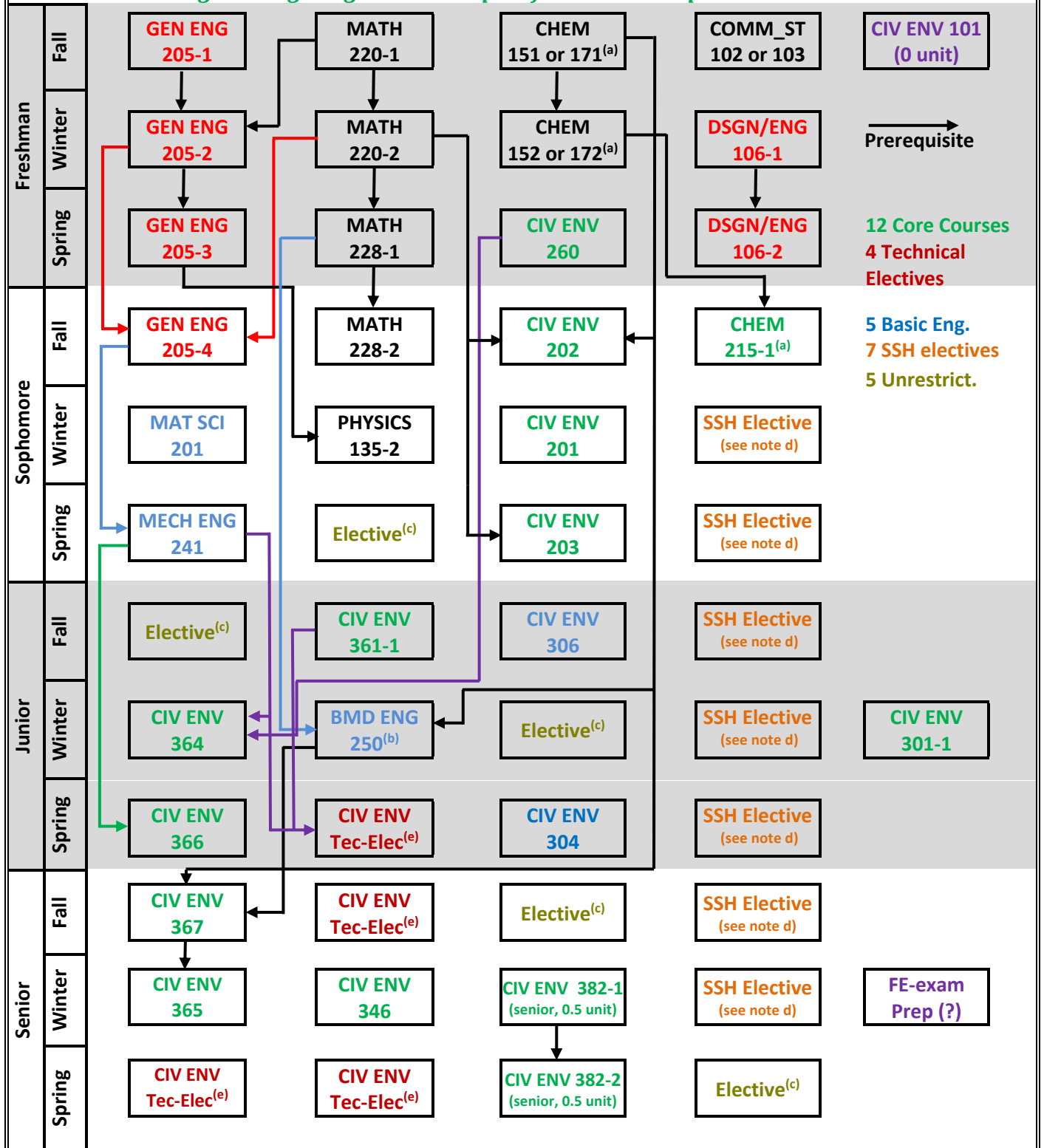


Environmental Engineering Program – example of a curriculum path

2024-2025



Notes:

- These courses have a laboratory requirement CHEM 161, 162, or 181, 182. If no placement in Chemistry then take CHEM 110 in the Fall, and then CHEM 131, 132 with associated laboratories CHEM 141, 142. CHEM 215-1 has a laboratory requirement CHEM 235-1.
- May choose from BMD ENG 250 or CHEM ENG 211 (need approval from CHEME for enrollment). Other Basic Engineering Thermodynamics course can be taken after approval.
- May choose from any course offered for credit by the University.
- Courses must be selected to meet the Social Science-Humanities requirement.
- Choose courses from the approved list: at least 3 must carry 100% engineering topics; courses listed are recommended.

Environmental Engineering Program 2024-2025

Social Science-Humanities Requirement (7 units)

Seven courses are required to satisfy the requirements of this subgroup. The seven courses must meet the following criteria.

- Maximum of 5 units from either social science or humanities category
- At least 3 units must be thematically related
- No more than 3 units of 100-level courses
- AP credits allowed

Foreign language study can be incorporated into the program, but should be started as early as possible, preferably in the freshman year.

Courses taken for a student's Social Science/Humanities requirement must be approved in advance by the McCormick Humanities Panel. Complete requirement information is at the McCormick Undergraduate Engineering Office web site, <http://www.mccormick.northwestern.edu/students/undergraduate/social-science-humanities-theme/index.html>. You must submit your theme form via McCormick Advising System (MAS).

Technical Electives (TE) – choose four courses

Technical Electives must be taken from the lists below. We are suggesting 3 different tracks based on sets of courses organized around specific themes. **General rule:** *a minimum of three (3) of these electives must carry 100% engineering topics⁽¹⁾, only one (1) CIV ENV 399 can be counted towards a technical elective.*

Urban Sustainability

- CIV ENV 368 - Sustainability: The City
- CIV ENV 387 - Design of Sustainable Urban Districts
- CIV ENV 353 – Energy Geostructures and Geosystems
- CIV ENV 309 – Climate and Energy - Law & Policy - (100% general topic course)

Fate of contaminants in the Environment

- CIV ENV 361-2 – Public and Environmental Health
- CIV ENV 370 – Emerging Organic Contaminants
- CIV ENV 317 – Organic Geochemistry (100% MTS)
- CIV ENV 395 - Air Pollution

Resource Recovery

- CIV ENV 353 – Energy Geostructures and Geosystems
- CIV ENV 368 - Sustainability: The City
- CIV ENV 442 - Environmental Biotechnology for Resource Recovery
- CHEM ENG 367: Quantitative Methods in Life Cycle Analysis or CIV ENV 399

A la carte⁽²⁾: You need to take 3 courses that count towards 100% engineering content with **2** from {CIV ENV 361-2, 368, 370, 395-Air Pollution} and any engineering 300 level - or higher - course counting towards 100% engineering content, and then one⁽¹⁾ 300 level course choose that you can choose from {CIV ENV: 303; 308; 309; 314; 317; 395-25; EARTH 340; 343; 361; 370}. You can also choose courses at the graduate level courses such as CIV ENV 440⁽²⁾, CIV ENV 442/443⁽²⁾. In addition, the GEN-ENG 220-1,2 sequence can count towards 1 technical elective. Only 1 CIV ENV 399 can be counted towards a technical elective content. You need permission from your advisor and the EES program director.

⁽¹⁾ <https://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.html>

⁽²⁾ Requires instructor permission and a permission number from the CIV ENV office.

BS in Environmental Engineering: Curriculum at a Glance (48 units)

McCormick Requirements (27 units)

Mathematics (4 units)	
1	Math 220: Differential Calculus of One Variable Functions
2	Math 224: Integral Calculus of One Variable Functions
3	Math 230: Differential Calculus of Multivariable Functions
4	Math 234: Multiple Integration and Vector Calculus

Engineering Analysis (4 units)	
5	GEN ENG 205-1: Programming and Linear Algebra
6	GEN ENG 205-2: Statics and Dynamics
7	GEN ENG 205-3: Systems Dynamics Analysis
8	GEN ENG 205-4: Differential Equations

Basic Science (4 units)	
9	CHEM 131, 151, 171
10	CHEM 132, 152, 172
11	PHYSICS 135-2

Design and Communication (3 units)	
12	DSN 106-1,2: Design Thinking & Communication
13	ENG 106-1,2: Writing
14	GEN ENG 220 -CAD (modified to satisfy speaking req)

Humanities Theme (7 units)	
15	
16	
17	
18	
19	
20	
21	

Unrestricted Electives (5 units)	
22	CIV ENV 301-1 Professional Development (0.3 units)
23	
24	
25	
26	
27	Partial units from Chemistry & Physics Laboratories

Environmental Engineering Major Requirements (21 units)

Gateway Courses (3 units)	
1	CIV ENV 201 – Engineering Possibilities: Decision Science in the Age of Smart Technologies
2	CIV ENV 202 – Biological & Ecological Principles
3	CIV ENV 203 – Earth in the Anthropocene

Basic Engineering (5 units)	
4	MAT SCI 201: Material Science
5	MECH ENG 241: Fluid Mechanics I
6	BMD ENG 250, or CHEM ENG 211: Thermodynamics
7	CIV ENV 304 - Civil and Environmental Engineering Analysis
8	CIV ENV 306: Uncertainty Analysis

ENV ENG Core Courses (9 units)	
9	CHEM 201 – Organic Chemistry I
10	CIV ENV 260 – Environmental Systems and Processes
11	CIV ENV 361-1 – Environmental Microbiology
12	CIV ENV 346 – Ecohydrology
13	CIV ENV 364 – Sustainable Water Systems
14	CIV ENV 365 – Environmental Laboratory
15	CIV ENV 366 – Dynamics in Chemical Transport and Reaction
16	CIV ENV 367 – Chemical Processes in Aquatic Systems
17	CIV ENV 382 -1,2 – Capstone Design

Technical Electives (4 units) - See tracks below and the approved list of courses*	
18	
19	
20	
21	

* At least 3 units must be 100% Engg Topic & only 1 399 can count as Tech Elective

Urban Sustainability	
	CIV ENV 368 - Sustainability: The City
	CIV ENV 387 - Design of Sustainable Urban Districts
	CIV ENV 353 – Energy Geostuctures and Geosystems
	CIV ENV 309 – Climate and Energy - Law & Policy - (100% general topic course)

Fate of contaminants in the Environment	
	CIV ENV 361-2 – Public and Environmental Health
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	CIV ENV 368 - Sustainability: The City
	CIV ENV 442 - Environmental Biotechnology for Resource Recovery
	CHEM ENG 367: Quantitative Methods in Life Cycle Analysis or CIV ENV 399

In red are courses taught by the Department