**Environmental Engineering Program – example of a curriculum path**

### Freshman
- **Fall**
  - GEN ENG 205-1
  - MATH 220-1
  - CHEM 151 or 171\(^{(a)}\)
  - GEN CMN 102 or 103 (0 unit)
- **Winter**
  - GEN ENG 205-2
  - MATH 220-2
  - CHEM 152 or 172\(^{(a)}\)
  - DSGN/ENG 106-1

### Sophomore
- **Fall**
  - GEN ENG 205-3
  - MATH 228-1
  - CIV ENV 260
  - DSGN/ENG 106-2
- **Winter**
  - MAT SCI 201
  - PHYSICS 135-2
  - CIV ENV 201
  - SSH Elective (see note d)
- **Spring**
  - MECH ENG 241
  - Elective\(^{(c)}\)
  - CIV ENV 203
  - SSH Elective (see note d)

### Junior
- **Fall**
  - Elective\(^{(c)}\)
  - CIV ENV 361-1
  - CIV ENV 306
  - SSH Elective (see note d)
- **Winter**
  - CIV ENV 364
  - BMD ENG 250\(^{(b)}\)
  - Elective\(^{(c)}\)
  - SSH Elective (see note d)
- **Spring**
  - CIV ENV 340
  - CIV ENV Tec-Elec\(^{(e)}\)
  - CIV ENV 304
  - SSH Elective (see note d)

### Senior
- **Fall**
  - CIV ENV 367
  - CIV ENV Tec-Elec\(^{(e)}\)
  - Elective\(^{(c)}\)
  - SSH Elective (see note d)
- **Winter**
  - CIV ENV 365
  - CIV ENV 346
  - CIV ENV 382-1 (senior, 0.5 unit)
  - SSH Elective (see note d)
- **Spring**
  - CIV ENV Tec-Elec\(^{(e)}\)
  - CIV ENV Tec-Elec\(^{(e)}\)
  - CIV ENV 382-2 (senior, 0.5 unit)
  - SSH Elective (see note d)

### Notes:
- **a.** 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.
- **b.** May choose from BME 250 or CHEM ENG 211 (need approval from ChemE for enrollment). Other Basic Engineering Thermodynamics course can be taken after approval.
- **c.** May choose from any course offered for credit by the University.
- **d.** Courses must be selected to meet the Social Science-Humanities requirement.
- **e.** Choose courses from the approved list: at least 3 must carry 100% engineering topics; courses listed are recommended.

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Environmental Engineering Program 2022-2023

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 Geosstructures 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 314 – Organic Geochemistry (100% MTS)
- CIV_ENV 395 - Projects Practicum in Environmental Engineering

### Resource Recovery
- CIV_ENV 353 – Energy Geosstructures and Geosystems
- CIV_ENV 368 - Sustainability: The City
- CIV_ENV 442/443 - Environmental Biotechnology/Microbial Ecology for Resource Recovery
- CIV_ENV 399 - Research project (100% Eng.)

A la carte\(^{(2)}\): If you do not want to follow any of these tracks you need to take 3 courses that count towards 100% engineering content with 2 from \{CIV_ENV 361-2, 368, 370, 395-Practicum\} 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; 314; 317; 395-20,23,25; EARTH 340; 343; 361; 370\}. You can also choose courses at the graduate level courses such as CIV_ENV 440\(^{(1)}\), CIV_ENV 442/443\(^{(2)}\). Only 1 CIV_ENV 399 can be counted towards a technical elective content. You need to receive permission from your advisor and the EES program director – Prof. Jean-François Gaillard-for this selection of technical elective courses.

\(^{(1)}\)(100% MTS), \(^{(2)}\) Requires instructor permission and a permission number from the CIV ENV office.

Updated 9-15-2022
BS in Environmental Engineering Curriculum - at a Glance (48 units)

**McCormick Requirements (27 units)**

<table>
<thead>
<tr>
<th>Mathematics (4 units)</th>
<th>Engineering Analysis (4 units)</th>
<th>Basic Science (4 units - 1 included in major)</th>
<th>Design and Communication (3 units)</th>
<th>Humanities Theme (7 units)</th>
<th>Unrestricted Electives (5 units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Math 220-1: Differential Calculus of One Variable Functions</td>
<td>5 EA1 (Programming and Linear Algebra)</td>
<td>9 Chemistry 131, 151, 171</td>
<td>13 DSN 106-1,2: Design Thinking &amp; Communication</td>
<td>16</td>
<td>23 CIV ENV 301-1 Professional Development (0.3 units)*</td>
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<tr>
<td>2 Math 220-2: Integral Calculus of One Variable Functions</td>
<td>6 EA2 (Statics and Dynamics)</td>
<td>10 Chemistry 132, 152, 172</td>
<td>14 ENG 106-1,2: Writing</td>
<td>17</td>
<td>24</td>
</tr>
<tr>
<td>3 Math 228-1: Differential Calculus of Multivariable Functions</td>
<td>7 EA3 (Systems Dynamics Analysis)</td>
<td>11 Physics 135-2</td>
<td>15 GEN CMN 102/103 Public Speaking/Analysis Literature</td>
<td>18</td>
<td>25</td>
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<tr>
<td>4 Math 228-2: Multiple Integration and Vector Calculus</td>
<td>8 EA4 (Differential Equations)</td>
<td>12</td>
<td>16</td>
<td>26</td>
<td>27</td>
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</table>

**Environmental Eng Major Requirements (21 units )**

<table>
<thead>
<tr>
<th>Gateway Courses (3 units)</th>
<th>ENV ENG Core Courses (9 units)</th>
<th>Basic Engineering (5 units)</th>
<th>Technical Electives (4 units) - See tracks below and the approved list of courses*</th>
</tr>
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<tbody>
<tr>
<td>1 CIV ENV 201 – Engineering Possibilities: Decision Science in the Age of Smart Technologies</td>
<td>4 CHEM 215-1 – Organic Chemistry I</td>
<td>13 MAT SCI 201: Material Science</td>
<td>* At least 3 units must be 100% Engg Topic &amp; only 1 399 can count as Tech Elective</td>
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<td>3 CIV ENV 203 – Earth in the Anthropocene</td>
<td>6 CIV ENV 340 – Hydraulics and Hydrology</td>
<td>15 BMD ENG 250, or CHEM ENG 211: Thermodynamics</td>
<td>CIV ENV 368 - Sustainability: The City</td>
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<td>7 CIV ENV 361-1 – Environmental Microbiology</td>
<td>16 CIV ENV 304 - Civil and Environmental Engineering Analysis</td>
<td>CIV ENV 387 - Design of Sustainable Urban Districts</td>
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<td>9 CIV ENV 364 – Sustainable Water Systems</td>
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<td>CIV ENV 395 - Project Practicum in Environmental Engineering</td>
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<td>10 CIV ENV 365 – Environmental Laboratory</td>
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<td>Fate of contaminants in the Environment Track</td>
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<td>11 CIV ENV 367 – Chemical Processes in Aquatic Systems</td>
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<td>CIV ENV 361-2 – Public and Environmental Health</td>
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<td>12 CIV ENV 382 -1,2 – Capstone Design</td>
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<td>CIV ENV 370 – Emerging Organic Contaminants</td>
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* Units can combined with lab units to yield 1 credit