Civil Engineering Program – sample curriculum path

FRESHMAN
Fall
- GEN ENG 205-1
- MATH 220
- CHEM 131, 151, 171
- COMM ST 102, PERF ST 103, 203
- CIV ENV 195 (0 unit)

Winter
- GEN ENG 205-2
- MATH 224
- DSGN/ENG 106-1
- SSH Elective (see note f)
- GEN ENG 220-1 (0.5 unit)

Spring
- GEN ENG 205-3
- MATH 230
- DSGN/ENG 106-2
- CEE basic
- CIV ENV 220
- GEN ENG 220-2 (0.5 unit)

Sophomore
Fall
- GEN ENG 205-4
- MATH 234
- PHYSICS 135-2
- SSH Elective (see note f)
- 11 CEE basic, breadth, focus, & capstone courses
- 5 technical elect.
- 5 basic engrg.

Winter
- CIV ENV 216
- Thermodynamics
- CEE basic
- CIV ENV 201
- SSH Elective (see note f)
- 7 SSH electives
- 5 unrestricted elec.

Spring
- CIV ENV 260
- CIV ENV 304
- MECH ENG 241-0
- Basic Sci
- CIV ENV 203

Junior
Fall
- CIV ENV 221
- CIV ENV 250
- CEE Focus 1
- SSH Elective (see note f)

Winter
- Elective-2
- Technical Elective-2
- CEE Focus 2
- SSH Elective (see note f)
- CIV ENV 301-1 (0.34 unit)

Spring
- Elective-3
- Technical Elective-3
- CEE Focus 3
- Basic Sci.
- Elective-4

Senior
Fall
- CIV ENV 371 or 376
- Technical Elective-4
- CEE Focus 4
- CIV ENV 306

Winter
- CIV ENV 382-1 (0.5 unit)
- Technical Elective-5
- Elective-4
- CIV ENV 301-2 (0 unit)

Spring
- CIV ENV 382-2 (0.5 unit)
- SSH Elective (see note f)
- Elective-5
- SSH Elective (see note f)

Notes:
a. At least ONE MUST from BIO SCI, EARTH 201, 202, or CivEnv 203; the other can be any course except ASTRON and EARTH 203 listed in Basic Sciences.
b. May choose among MECH_ENG 222 (offers in winter quarter only), BMD_ENG 250 (offers in winter quarter only), and CHEM_ENG 211 (offers in winter and spring quarters only).
c. May choose among CivEng 201, 202, and 220.
d. Choose a total of 4 courses from the approved list (see next page). One must be design defined according to ABET; 4 courses must be from at least 2 focus areas.
e. May choose from any course offered for credit by the University. First elective unit is from the basic science lab sessions and CivEng 301-1.
f. Courses must be selected to meet the Social Science-Humanities theme requirement.
g. Must choose from an APPROVED list. A minimum of 12 units of Math/Science and 18 units of Engineering Topics (ET) from 48 units are required for BSCE. Consult with the partitioning table at http://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.php. These partitions are valid only for the academic year the course is taken. First technical elective unit is GenEng 222-1, 2.
h. Fundamental of Engineering Exam Review – all seniors are highly recommended to take.
i. CIV ENV 195 (zero unit) and GEN ENG 220-1, 2 for a total of 1 credit sequence is HIGHLY recommended for freshman and sophomores. Skills acquired from these courses are necessary for summer internship in civil and environmental engineering profession.
j. If no placement in Chemistry, then take CHEM 110 & 131 sequence.
### Summary

<table>
<thead>
<tr>
<th>Course Type</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATHEMATICS (4 units)</td>
<td>MATH 220, 224, 230, 234</td>
</tr>
<tr>
<td>ENGINEERING ANALYSIS &amp; COMPUTER PROFICIENCY (4 units)</td>
<td>GEN ENG 205-1, 2, 3, 4</td>
</tr>
<tr>
<td>DESIGN &amp; COMMUNICATIONS (3 units)</td>
<td>DSGN 106-1,2; ENGLISH 106-1,2; COMM ST 102, PERF ST 103, 203</td>
</tr>
</tbody>
</table>
| BASIC SCIENCE (4 units) | 1 Chemistry 131, 151, or 171 (note: lab units go to unrestricted elective)  
2 Physics 135-2 (note: lab units go to unrestricted elective)  
3 Earth 201 or CivEnv 203 (recommended, spring quarter); Earth 202 or BioSci course listed in this group are acceptable. Earth 203 and Astronomy are not acceptable  
4 any acceptable chemistry, physics, Earth, CivEnv, and BioSci listed under Basic Sciences. Earth 203 and Astronomy are not acceptable |
| BASIC ENGINEERING (5 units) | CivEnv 216 (recommended for sophomore year); ME 241 (recommended spring quarter); Thermo (winter quarter: ME 222, BME 250, ChemE 211); CivEnv 304 and 306 |
| SOCIAL SCIENCE & HUMANITY (7 units) | 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; and AP credits allowed. Must submit theme form via MAS; theme must be approved by McCormick |
| UNRESTRICTED ELECTIVES (5 units) | 1 Chemistry & Physics labs (0.68 unit) + CivEnv 301-1 (0.34 unit)  
2-5 choose any courses offered for credits by the university |
| CIVIL ENGINEERING MAJOR (16 units) | | |
| BASIC COURSES (2 units) | choose 2: CivEnv 201, 202, 220; [201 – Data Analysis (Winter, sophomore year) and 220 – Structural Art (Spring, freshmen year) recommended] |
| CIVIL ENGINEERING BREADTH (4 units) | CivEnv 221, 371 or 376, 250, (recommended for junior or senior fall), and 260 (recommended sophomore spring quarter) |
| FOCUS AREAS (4 units) | must be chosen from at least 2 areas (see below) from an approved list provided in CEE web and student handbook, I must be a design course defined according to ABET program criteria |
| CAPSTONE DESIGN (1 unit) | CivEnv 382-1,2<sup>o</sup> – 0.5 unit each in winter and spring quarters |
| TECHNICAL ELECTIVES (5 units) | 1 GenEng 220-1,2 – highly recommended for freshmen winter and spring quarters  
2-5 choose from an approved list, must meet 18 units of ET requirement |
| PROFESSIONAL DEVELOPMENT | CivEnv 301-1 (recommended for junior winter quarter) |

The following courses must be taken in sequence: 205-2→216→221→325 or 323; 205-2→ME 241→250; to be in compliance with ABET accreditation criteria. Appropriate design and analysis courses from focus areas must be taken before CivEnv 382 which is taken during the last winter & spring quarters (contiguously) prior to graduation.

#### Focus Areas Approved list

**Architectural Engineering & Design**  
CivEnv 386<sup>o</sup> – Design of High Performance Buildings (Fall)  
CivEnv 395 – Design of Sustainable Urban Districts (Winter)  

**Environmental Engineering**  
CivEnv 340 – Hydraulics and Hydrology; pre-req.: ME 241 (Spring)  

**Geotechnics**  
CivEnv 352<sup>o</sup> – Foundation Design; pre-req.: CivEnv 250 (Winter, odd year)  

**Management**  
CivEnv 330 – Engineering Project Management (Fall)  
CivEnv 332 – Construction Estimating (Spring)  
CivEnv 336<sup>o</sup> – Construction Scheduling(Winter)  

**Structural Engineering**  
CivEnv 323<sup>o</sup> – Structural Steel Design; pre-req.: CivEnv 221 (Winter, even year)  
CivEnv 325<sup>o</sup> – Reinforced Concrete Design; pre-req.: CivEnv 221 (Winter)  

**Transportation**  
CivEnv 371/376 - Introduction to Transportation Planning & Analysis or Transportation System Operations whichever is not taken in the core course (Fall)  

**Others**  
CivEnv 399 – Projects (must be approved by ABET Coordinator if it is design), max. 1 unit permitted in major

---

**Note:** You must meet pre-requisite requirements to be in compliance with ABET accreditation criteria.

<sup>o</sup> denoted as design course

To ensure compliance to this ABET MTS and ET requirements, please consult with your academic advisor and the partition table at [http://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.php](http://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.php) on courses offered by McCormick before registering.

**Professionalism and Life-Long Learning**  
All seniors are highly recommended to take CivEnv 301-2 – Professional Development Seminar II. This is a no credit, no tuition course on the review for Fundamental of Engineering Exam.

---

Updated 7-17-2018