Civil Engineering Program – sample flow chart 
2016-2017

FRESHMAN
Fall
GEN_ENG 205/215-1
MATH 220-0
CHEM 101 or 171
GEN_CMN 102 or 103
CIV_ENV 195

Winter
GEN_ENG 205/215-2
MATH 224-0
Basic Sci Elective
DSGN/ENG 106-1
GEN_ENG 220-1

Spring
GEN_ENG 205/215-3
MATH 230-0
PHYSICS 135-2
DSGN/ENG 106-2
GEN_ENG 220-2

Sophomore
Fall
GEN_ENG 205/215-4
MATH 234-0
PHYSICS 135-2
DSGN/ENG 106-2
GEN ENG 220-2

Winter
CIV_ENV 216-0
Thermodynamics
MECH_ENG 241-0
SSH Elective
GEN_ENG 220-1

Spring
CIV_ENV 260-0
IEMS 326
MECH_ENG 241-0
SSH Elective
GEN_ENG 220-1

Junior
Fall
CIV_ENV 221-0
CIV_ENV 250-0
MTS Elective
(Ssh Env 306)
DDR

Winter
CIV_ENV 325-0
Technical Elective
EECS 202/270 or ME 233
SSH Elective
CIV_ENV 301-1

Spring
DS Elective
Technical Elective
CIV_ENV 340-0
Basic Sci Elective

Senior
Fall
CIV_ENV 371 or 376
Technical Elective
Technical Elective
MTS Elective

Winter
Electric
Technical Elective
Technical Elective
SSS Elective

Spring
CIV_ENV 382-0
Technical Elective
Technical Elective
Elective

Notes:

a. Must register both courses concurrently.
b. Completion of CHEM 171 & 172 meets the requirement of CHEM 101, 102, 103. CHEM 171 replaces CHEM 101 & 102.
c. At least ONE MUST choose from biological sciences or earth and planetary science lists in Basic Sciences. The other can be any course except Astronomy listed in Basic Sciences.
d. May choose among MECH_ENG 220, BME 250, and CHEM_ENG 211.
e. IEMS 326 recommended. May choose from material science, systems engrg. & analysis, computer architecture & numerical analysis, & computer programming lists in Basic Engnr.
f. May choose from any course offered for credit by the University. 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.
g. Courses must be selected to meet the Social Science-Humanities theme requirement.
h. Choose courses from the approved list (see next page). One MTS elective must be CIV_ENV 306 (50% math). A minimum of 12 units of Math/Science and 18 units of Engineering Topics (ET) from 48 units are required for BSCE. Consult with your academic advisor and the partitioning table at http://www.mccormick.northwestern.edu/academics/undergraduate/abes/course-partitioning.php. These partitions are valid only for the academic year the course is taken.
i. Any course 300-level or above, except GEN_ENG 220-1,2 or DSGN 254, in math, science, engineering or other areas supporting the civil engineering specialization area(s) which at present is economic courses. CIV_ENV 395, 398, or 399 may be acceptable through petition. Must meet pre-requisite requirements of chosen courses.
j. Choose from CIV_ENV 323, 336, 352, 395 (must be design class), 399 (must be design project approved by ABET Coordinator). 421
k. CIV_ENV 301-1,2 – Professional Development Seminar I, II. This is a no credit, no tuition course series on the review for Fundamental of Engineering Exam (CIV_ENV 301-2), professional ethics & life-long learning. CIV_ENV 301-1 is required.

Updated 8-2-2016
Civil Engineering Program 2016-2017

Civil Engineering Core Courses (7 units)

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CivEnv 221</td>
<td>Theory of Structures I</td>
</tr>
<tr>
<td>CivEnv 260</td>
<td>Fundamental of Environmental Engineering</td>
</tr>
<tr>
<td>CivEnv 330</td>
<td>Construction Management</td>
</tr>
<tr>
<td>CivEnv 371 or 376</td>
<td>Introduction to Transportation Planning &amp; Analysis or Transportation System Operations</td>
</tr>
</tbody>
</table>

All juniors are required to take CivEnv

The following courses must be taken in sequence: 205-2 → 216 → 221 → 325; 205-2 → ME 241 → 250; ME 241 → 340 to be in compliance with ABET accreditation criteria.

Social Science-Humanities Requirement

Seven courses chosen according to either of the following two options:

- **Option A:** At least two courses must be chosen in each of three areas: (1) Social and Behavioral Science (SBS); (2) Historical Studies and Values (HSV); and (3) Fine Arts, Language and Literature (FAL). Of the seven courses, only three 100-level introductory courses may be presented and three courses must be thematically related to provide depth.

- **Option B:** Five of the seven courses must clearly have a thematic relatedness. For breadth, no more than five courses may come from a single area. Of the seven courses, only three may be 100-level introductory courses.

The courses taken for a student’s Social Science-Humanities Requirement must be approved in advance by the McCormick Humanities Panel. Foreign language study can be incorporated into the program, but should be started as early as possible, preferably in the freshman year. Complete theme requirement information and theme declaration form are available at the McCormick Undergraduate Engineering Office website, http://www.mccormick.northwestern.edu/documents/students/undergraduate/social-science-humanities-theme/social-science-humanities-theme-form.pdf.

Approved list of DS, MTS, and Technical Electives

**Design and Synthesis (DS) – choose two courses**

- One course must be CivEnv 382 – Capstone Design (pre-req. 325, 250, 330, 371/376, co-req. 340), plus
- Choose one course from below
  - CivEnv 323 Structural Steel Design, pre-req. 221
  - CivEnv 336 Project Scheduling, pre-req. 330
  - CivEnv 352 Foundation Engineering, pre-req. 250 (offer winter odd year)
  - CivEnv 395 Special Topics (must be design class)
  - CivEnv 399 Projects (must be design project approved by ABET Coordinator)
  - CivEnv 421 Prestressed Concrete, pre-req. 325 (requires instructor permission and a permission number from CEE Office)

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

**Mathematical Techniques and Science (MTS) – choose two courses and no 399 course**

- One course must be CivEnv 306 (50% math); plus
- One course from below
  - Any course 300 level or above from the Math Department.
  - Any course 200 level or above in Biological Sciences, Chemistry, Earth & Planetary Science 201 and above, or Physics; plus CHEM 103 and PHYSICS 135-3.
  - Any course 300 level or above from Engineering Science and Applied Mathematics.

**ABET requires min. of 12 units of math/science from 48 units for BSCE degree.** To ensure compliance to this requirement, please consult with your academic advisor and the partition table at http://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.php on courses offered by McCormick before registering. These partitions are valid only for the academic year the course is taken.

**Technical Electives (TE) – choose five courses**

- Any course, 300 level or above in math, science, engineering or other areas supporting the civil engineering specialization area(s) which at present is Economic courses, CivEnv 395, 398, or 399 (limit to 1 399-course) may be acceptable through petition. You must meet pre-requisite requirements of chosen courses to be in compliance with ABET accreditation criteria.

- For a comprehensive list of approved courses, see “Suggested electives for BSCE Specialty Concentration for Jr/Sr 2011-2012”.

- Other courses from Weinberg College of Arts and Sciences or Kellogg may be approved upon petition.

**ABET requires a min. of 18 units of “Engineering Topics” from 48 units for the BSCE degree.** To ensure compliance to this requirement, please consult with your academic advisor and the partition table at http://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.php on courses offered by McCormick before registering. These partitions are valid only for the academic year the course is taken.

**Professionalism and Life-Long Learning**

All juniors are required to take CivEnv 301-I – Professional Development Seminar I. This is a no credit, no tuition course on civil engineering profession, engineering ethics, and life-long learning. All seniors are encouraged and 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.