Mission Statement
The mission of the Civil and Environmental Engineering Department is to
provide high-quality, state-of-the-art educational and research programs. The
Department strives for excellence in its academic programs, its
research endeavors, and its university, community and professional
service activities. The program is designed to prepare graduates for
success in their immediate, as well as long-term, professional careers
as practitioners, for obtaining a professional license, and for pursuing
advanced studies and lifelong learning.

Program Educational Objectives
The graduates of the Civil and Environmental Engineering Program, in
their early careers, will be expected to:

1. apply their knowledge and skills as effective, productive civil
   engineers within private corporations, engineering consulting firms,
   as well as local, state and federal government agencies in the design
   of contemporary civil engineering systems and processes
2. work and communicate effectively with others on multidisciplinary
   teams to develop practical, technically sound, cost-effective solutions
   to complex and diverse civil engineering problems
3. build upon the fundamental knowledge gained in the undergraduate
   program of study, allowing analysis and design in alternative and
   innovative conditions
4. engage in the profession in an ethical and responsible manner
5. exhibit leadership skills
6. become and remain active members within professional and
   technical societies

Student Outcomes
Graduates of the Civil and Environmental Engineering Department will
demonstrate the following skills and attributes when they receive their
B.S. degrees:

a) apply knowledge of mathematics, science and engineering to solve
civil engineering problems
b) design and conduct experiments; collect and interpret data
c) design a civil engineering system, component or process to meet
specific needs
d) collaborate and communicate on multi-disciplinary teams
e) identify, formulate and solve civil engineering problems
f) demonstrate understanding of ethical and professional responsibility
   of a civil engineer
g) communicate effectively in oral and written form
h) demonstrate understanding of global and societal issues as they
   pertain to civil engineering
i) explain the importance of life-long learning and continuing education
j) demonstrate knowledge of contemporary issues
k) demonstrate proficiency in using modern engineering tools in the
   practice of civil engineering
l) explain the aspects of professional practice issues relevant to the
   civil engineering profession (include principles of sustainability in design;

explain basic concepts in project management, business, public policy,
and leadership; analyze issues in professional ethics; and explain the
importance of professional licensure)

The civil engineering curriculum has been designed to provide a
broad education in the basic sciences, mathematics, and engineering
sciences, civil engineering analysis and design, and their application
to civil engineering practice. The courses in civil engineering may be
considered as an array of groups, each representing an area of concern
to contemporary society and industry. Technical electives may be
selected from one of these major areas according to the student's
particular interest or may be chosen from several areas in order to
broaden one's knowledge. A student who contemplates continuing
study at the graduate level should seek the advice of his/her faculty
counselor in the selection of elective courses. Realizing the social
implications of the practice of civil engineering, the program provides
for the development of a background in economics, the social sciences,
humanities, communication skills, ethics, and related non-technical
areas.

Admission Requirements: Admission is contingent upon satisfaction
of the general undergraduate admission requirements of the University
(http://bulletins.wayne.edu/undergraduate/general-information/
 admission) and the bachelor of science programs in the College of
Engineering (http://bulletins.wayne.edu/undergraduatecollege-
engineering/bas).

Candidates for the Bachelor of Science degree must complete 123-126
credits of coursework, including the General Education (http://
bulletins.wayne.edu/undergraduate/general-information/general-
education) requirements. All course work must be completed in
accordance with the academic procedures of the University (http://
bulletins.wayne.edu/undergraduatecollege/academic-regulations) governing undergraduate scholarship and
degrees. Non-engineering entries, cited below by subject rather than
individual course number, indicate courses to be selected in fulfillment of
the University General Education Requirements. The degree requirements
shown in the curriculum below are in effect as of the publication date of
this bulletin. Students should consult their advisors for verification of
current requirements.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Semester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAT 2010</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>CHM 1225</td>
<td>General Chemistry I for</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Engineers</td>
<td></td>
</tr>
<tr>
<td>CHM 1230</td>
<td>General Chemistry I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BE 1200</td>
<td>Basic Engineering I: Design in Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ENG 1020</td>
<td>Introductory College Writing</td>
<td>3</td>
</tr>
<tr>
<td>Second Semester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAT 2020</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>PHY 2175</td>
<td>University Physics for</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Engineers I</td>
<td></td>
</tr>
</tbody>
</table>
### Second Year
#### First Semester
- **MAT 2030**: Calculus III  
- **PHY 2185**: University Physics for Engineers II  
- **BE 2100**: Basic Engineering III: Probability and Statistics in Engineering  
- **CE 2410**: Statics (ME 2410)  

#### Credits 18

### Second Semester
- **MAT 2150**: Differential Equations and Matrix Algebra  
- **CE 2420**: Elementary Mechanics of Materials  
- **CE 3450**: Civil Engineering Materials  
- **ENG 3050**: Technical Communication I: Reports  

#### Credits 14

### Physical Science Elective
1 Students may select from BIO 1050, BIO 1510 or GEL 1010 to meet the Physical Science elective requirement.

#### Credits 3-4

### Third Year
#### First Semester
- **CE 3250**: Applied Fluid Mechanics  
- **CE 4400**: Structural Analysis  
- **CE 4510**: Introduction to Geotechnical Engineering  
- **CE 4850**: Engineering Economy  

#### Credits 15

#### Second Semester
- **CE 4210**: Introduction to Environmental Engineering  
- **CE 4410**: Steel Design  
- **CE 4600**: Transportation Engineering  
- **PHI 1120**: Professional Ethics  

#### Credits 15

### Fourth Year
#### First Semester
- **CE 4995**: Senior Design Project  
- **CE Technical Elective**  
- **CE Design Elective**  

#### Credits 15-16

#### Second Semester
- **CE 5230**: Water Supply and Wastewater Engineering  
- **CE 5410**: Energy, Emissions, Environment (E3) Design  
- **CE 5510**: Geotechnical Engineering I  
- **CE 5520**: Geotechnical Engineering II  
- **CE 5610**: Highway Design  
- **CE 6130**: Open Channel Hydraulics  
- **CE 6150**: Hydrologic Analysis and Design  
- **CE 6190**: Groundwater  
- **CE 6340**: Bridge Design and Evaluation  
- **CE 6370**: Advanced Reinforced Concrete Design  
- **CE 6410**: Advanced Steel Design  
- **CE 6580**: Geoenvironmental Engineering I  
- **CE 6660**: Pavement Management Systems: Principles and Practices  

#### Credits 15-16

#### Total Credits 123-126

### Technical Electives: Civil Engineering students are required to complete at least six credits in technical electives. Applicable courses include CE 3010, CE 3070, any CE course at the 5000 or 6000 level, or other courses approved by the undergraduate program coordinator.

### Design Electives: Students are required to complete two courses from:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 5230</td>
<td>Water Supply and Wastewater Engineering</td>
<td>4</td>
</tr>
<tr>
<td>CE 5410</td>
<td>Energy, Emissions, Environment (E3) Design</td>
<td>4</td>
</tr>
<tr>
<td>CE 5510</td>
<td>Geotechnical Engineering I</td>
<td>4</td>
</tr>
<tr>
<td>CE 5520</td>
<td>Geotechnical Engineering II</td>
<td>3</td>
</tr>
<tr>
<td>CE 5610</td>
<td>Highway Design</td>
<td>3</td>
</tr>
<tr>
<td>CE 6130</td>
<td>Open Channel Hydraulics</td>
<td>3</td>
</tr>
<tr>
<td>CE 6150</td>
<td>Hydrologic Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>CE 6190</td>
<td>Groundwater</td>
<td>3</td>
</tr>
<tr>
<td>CE 6340</td>
<td>Bridge Design and Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>CE 6370</td>
<td>Advanced Reinforced Concrete Design</td>
<td>4</td>
</tr>
<tr>
<td>CE 6410</td>
<td>Advanced Steel Design</td>
<td>4</td>
</tr>
<tr>
<td>CE 6580</td>
<td>Geoenvironmental Engineering I</td>
<td>4</td>
</tr>
<tr>
<td>CE 6660</td>
<td>Pavement Management Systems: Principles and Practices</td>
<td>4</td>
</tr>
</tbody>
</table>

### Other courses with approval of the undergraduate program coordinator.