University Requirements (23-24)
- Writing – American Thought and Language (ATL) 4
- Integrative Studies in Humanities (IAH) 8
- Integrative Studies in Social Sciences (ISS) 8
- Bioscience (one of the following):
  - BS 110, BS 111, ENT 205, MMG 205, MMG 301, PLB 105, PSL 250, ZOL 141 3-4

College Requirements (29)
- CEM 141 General Chemistry OR
- CEM 151 General and Descriptive Chemistry 4
- CSE 131 Introduction to Technical Computing 3
- MTH 132 Calculus I 3
- MTH 133 Calculus II 4
- MTH 234 Multivariable Calculus 4
- MTH 235 Differential Equations 3
- _PHY 183 Physics for Scientists & Engineers I_ 4
- _PHY 184 Physics for Scientists & Engineers II_ 4

Major Requirements (54-58)
A. Complete all of the following courses:
- CE 280 Introduction to Environmental Engineering 3
- CE 305 Intro to Structural Analysis and Design 4
- CE 312 Soil Mechanics 4
- CE 321 Introduction to Fluid Mechanics 4
- CE 337 Civil Engineering Materials I 4
- CE 341 Transportation Engineering 3
- CEM 161 Chemistry Laboratory I 1
- ME 221 Statics 3
- ME 222 Mechanics of Deformable Solids 4
- ME 361 Dynamics 3
- STT 351 Probability and Statistics for Engineering 3

B. Select one of the following courses:^2
- BE 351 Environmental Thermodynamics 3
- ECE 345 Electronic Instrumentation and Systems 3
- ME 201 Thermodynamics 3

C. Select one _additional_ course from the following:^2
- BE 351 Environmental Thermodynamics 3
- CE 271 Engineering Surveying 4
- ECE 345 Introduction to Electronic Instrumentation 3
- ME 201 Thermodynamics 3
- MSE 250 Materials Science & Engineering 3

D. Select four of the following courses, each from a different one of the six areas below:

**Structures**
- CE 400 Structural Mechanics 3
- CE 405 Design of Steel Structure 3
- CE 406 Design of Concrete Structures 3

**Geotechnical**
- CE 418 Geotechnical Engineering 4

**Hydraulics**
- CE 421 Engineering Hydrology 3
- CE 422 Applied Hydraulics 3

**Pavements**
- CE 431 Pavement Design and Analysis 4
- CE 432 Pavement Rehabilitation 3

**Transportation**
- CE 444 Principles of Traffic Engineering 3
- CE 448 Transportation Planning 3
- CE 449 Highway Design 4

**Environmental**
- CE 481 Environmental Chemistry 3
- CE 483 Water and Wastewater Treatment 3
- CE 485 Solid and Hazardous Waste Management 3
- CE 487 Microbiology for Environmental Health Engr 3

E. All sections of Major Requirements must total 52 credits. If additional credits are needed, they must be completed from Section B., C., or D., or from the following list:
- CE 444 Principles of Traffic Engineering 3
- CE 480 Environmental Chemistry Lab 1
- CE 481 Environmental Chemistry 3
- CE 487 Microbiology for Envir Health Engineering 3
- CE 490 Independent Study 1-3
- CE 491 Civil Engineering Design Project 1-4
- CE 492 Selected Topics in Civil Engineering 1-4

Other Electives (Variable)

**Total Credits Required for Degree** 128

The requirements listed above apply to students admitted to the Department of Civil & Environmental Engineering (CEE) beginning Fall 2002. The department of Civil & Environmental Engineering (CEE) constantly reviews program requirements and reserves the right to make changes as necessary. Consequently, each student is strongly encouraged to consult with his/her advisor to obtain assistance in planning an appropriate schedule of courses. Students who have questions about Civil Engineering should contact the Civil & Environmental Engineering Department Advising Office, 3546 Engineering Building, phone (517) 355-5107.

Some courses may have prerequisites, which are not otherwise required in the program. Students should check course descriptions to ensure they are aware of prerequisites.

---

^1 If PHY 231 is taken in place of PHY 183, PHY 233B must also be completed. If PHY 232 is taken in place of PHY 184, PHY 234B must also be completed.

^2 Credit cannot be earned in both BE 351 and ME 201.
Civil Engineering – Environmental Option

University Requirements (23-24)
Writing – American Thought and Language (ATL) 4
Integrative Studies in Humanities (IAH) 8
Integrative Studies in Social Sciences (ISS) 8
Bioscience (one of the following):
  BS 110, BS 111, ENT 205, MMG 205, MMG 301, PLB 105, PSL 250, ZOL 141 3-4

College Requirements (29)
CEM 151 General and Descriptive Chemistry 4
CSE 131 Introduction to Technical Computing 3
MTH 132 Calculus I 3
MTH 133 Calculus II 4
MTH 234 Multivariable Calculus 4
MTH 235 Differential Equations 3
PHY 183 Physics for Scientists & Engineers I 4
PHY 184 Physics for Scientists & Engineers II

Major Requirements (62-64)
A. Complete all of the following courses:
CE 280 Introduction to Environmental Engineering 3
CE 305 Intro to Structural Analysis and Design 4
CE 312 Soil Mechanics 4
CE 321 Introduction to Fluid Mechanics 4
CE 421 Engineering Hydrology OR
CE 422 Applied Hydraulics 3
CE 480 Environmental Chemistry Lab 1
CE 481 Environmental Chemistry 3
CE 483 Water and Wastewater Treatment 3
CE 485 Solid and Hazardous Waste Management 3
CE 487 Microbiology for Environmental Health Engr 3
CEM 152 Principles of Chemistry 3
CEM 161 Chemistry Laboratory I 1
CEM 251 Organic Chemistry I OR
CEM 351 Organic Chemistry I 3
CHE 201 Material and Energy Balances 3
ME 221 Statics 3
ME 222 Mechanics of Deformable Solids 4
ME 361 Dynamics 3
STT 351 Probability and Statistics for Engineering 3

B. Select one of the following courses: 2
BE 351 Environmental Thermodynamics 3
CHE 321 Thermodynamics for Chemical Engineers 4
ME 201 Thermodynamics 3

B. Select one of the following courses: 2
BE 351 Environmental Thermodynamics 3
CHE 321 Thermodynamics for Chemical Engineers 4
ME 201 Thermodynamics 3

C. Select two of the following courses, each from a different one of the four areas below:

Structures
CE 400 Structural Mechanics 3
CE 405 Design of Steel Structure 3
CE 406 Design of Concrete Structures 3

Geotechnical
CE 418 Geotechnical Engineering 4

Pavements
CE 431 Pavement Design and Analysis 4
CE 432 Pavement Rehabilitation 3

Transportation
CE 444 Principles of Traffic Engineering 3
CE 448 Transportation Planning 3
CE 449 Highway Design 4

Other Electives (Variable)

Total Credits Required for Degree 128

The requirements listed above apply to students admitted to the Department of Civil & Environmental Engineering (CEE) beginning Fall 2002. The department of Civil & Environmental Engineering (CEE) constantly reviews program requirements and reserves the right to make changes as necessary. Consequently, each student is strongly encouraged to consult with his/her advisor to obtain assistance in planning an appropriate schedule of courses. Students who have questions about Civil Engineering should contact the Civil & Environmental Engineering Department Advising Office, 3546 Engineering Building, phone (517) 355-5107.

Some courses may have prerequisites, which are not otherwise required in the program. Students should check course descriptions to ensure they are aware of prerequisites.

1 If PHY 231 is taken in place of PHY 183, PHY 233B must also be completed. If PHY 232 is taken in place of PHY 184, PHY 234B must also be completed.

2 Credit cannot be earned in both BE 351 and ME 201.

Last revised March, 2002
Civil Engineering
Sample Program

**Freshman Year**

<table>
<thead>
<tr>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioscience</td>
<td>3/4 ATL 1XX</td>
</tr>
<tr>
<td>CEM 141/151</td>
<td>MTH 133</td>
</tr>
<tr>
<td>CEM 161</td>
<td>PHY 183</td>
</tr>
<tr>
<td>CSE 131</td>
<td>Elective Va</td>
</tr>
<tr>
<td>MTH 132</td>
<td>Elective Va</td>
</tr>
<tr>
<td>Total</td>
<td>14/15</td>
</tr>
</tbody>
</table>

**Sophomore Year**

<table>
<thead>
<tr>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAH 20X</td>
<td>4</td>
</tr>
<tr>
<td>ME 221</td>
<td>3</td>
</tr>
<tr>
<td>MTH 234</td>
<td>4</td>
</tr>
<tr>
<td>PHY 184</td>
<td>4</td>
</tr>
<tr>
<td>Item C. or Elective Va</td>
<td>MTH 235</td>
</tr>
<tr>
<td>Total</td>
<td>15/Va</td>
</tr>
</tbody>
</table>

**Junior Year**

<table>
<thead>
<tr>
<th>Fall* Credits</th>
<th>Spring* Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 305</td>
<td>4</td>
</tr>
<tr>
<td>CE 312</td>
<td>4</td>
</tr>
<tr>
<td>CE 341</td>
<td>Elective Va</td>
</tr>
<tr>
<td>Item B. Elective</td>
<td>STT 351</td>
</tr>
<tr>
<td>ISS 3XX</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
</tr>
</tbody>
</table>

**Senior Year**

<table>
<thead>
<tr>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item D. Elective</td>
<td>3/4</td>
</tr>
<tr>
<td>Item D. Elective</td>
<td>3/4</td>
</tr>
<tr>
<td>Item C. Elective</td>
<td>3/4</td>
</tr>
<tr>
<td>Elective Va</td>
<td>Elective Va</td>
</tr>
<tr>
<td>Elective Va</td>
<td>Elective Va</td>
</tr>
<tr>
<td>Total</td>
<td>9-12/Va</td>
</tr>
</tbody>
</table>

*These two semesters are interchangeable.

**Program Objectives**

The Department will provide an educational environment rich in opportunities for students to obtain knowledge and skills that will facilitate:

- civil engineering practice,
- life-long learning, and
- professional development,

all leading to career success.

The departmental community of students, faculty and staff will be characterized by integrity and by respect for individuals, the institution, the engineering profession, society and the environment. Programs and policies will accommodate the diverse needs and goals of individual students.

Undergraduate curricula, courses, organizations and activities will highlight:

- application of mathematics, science and contemporary methods to the solution of engineering problems;
- integration of experimentation, analysis, and design;
- refinement of writing and speaking for technical communication;
- development of interpersonal and social skills required for working on a team, in an organization, and with the general public; and
- awareness of professional ethics, societal impacts, and contemporary issues in engineering practice.

_Last revised March, 2002_
Civil Engineering – Environmental Option

Sample Program

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Sophomore Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>Spring</td>
</tr>
<tr>
<td>Credits</td>
<td>Credits</td>
</tr>
<tr>
<td>Bioscience (AT) 3/4</td>
<td>ATL 1XX 4</td>
</tr>
<tr>
<td>CEM 151</td>
<td>4</td>
</tr>
<tr>
<td>CEM 161</td>
<td>1</td>
</tr>
<tr>
<td>CSE 131</td>
<td>3</td>
</tr>
<tr>
<td>MTH 132</td>
<td>3</td>
</tr>
<tr>
<td>Total 14/15</td>
<td>Total 18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>Senior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>Spring</td>
</tr>
<tr>
<td>Credits</td>
<td>Credits</td>
</tr>
<tr>
<td>CE 312</td>
<td>4</td>
</tr>
<tr>
<td>CE 321</td>
<td>4</td>
</tr>
<tr>
<td>CE 483</td>
<td>3</td>
</tr>
<tr>
<td>IAH 2XX</td>
<td>4</td>
</tr>
<tr>
<td>Item B. Elective 3/4</td>
<td>STT 351 3</td>
</tr>
<tr>
<td>Total 18/19</td>
<td>Total 14/Va</td>
</tr>
</tbody>
</table>

Program Objectives

The Department will provide an educational environment rich in opportunities for students to obtain knowledge and skills that will facilitate

- civil engineering practice,
- life-long learning, and
- professional development,

all leading to career success.

The departmental community of students, faculty and staff will be characterized by integrity and by respect for individuals, the institution, the engineering profession, society and the environment. Programs and policies will accommodate the diverse needs and goals of individual students.

Undergraduate curricula, courses, organizations and activities will highlight

- application of mathematics, science and contemporary methods to the solution of engineering problems;
- integration of experimentation, analysis, and design;
- refinement of writing and speaking for technical communication;
- development of interpersonal and social skills required for working on a team, in an organization, and with the general public; and
- awareness of professional ethics, societal impacts, and contemporary issues in engineering practice.